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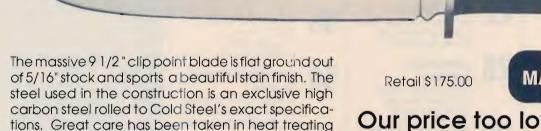
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DECEMBER 1987/AMERICAN SURVIVAL GUIDE 3

SURVINA.

THE MAGAZINE FOR SAFER LIVING

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The new Mini-AT .22LR semiautomatic pistol from Feather Industries combines Space Age looks with reliable operation, See page 18 (Photo by Martin Hasa). Inset: Tracker ATV conversions. See page 74.



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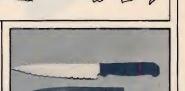
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SURVIVAL LINE

Western forest fires prove boon for scientists studying 'nuclear winter,' heat declared nature's deadliest force, terrorist bombings up in U.S., home medical, health tests proliferate . . .

THE massive forest fires which burned out of control in many western states last fall may prove to be a scientific windfall for researchers studying the "nuclear winter" theory.

Scientists with the U.S. Defense Nuclear Agency, DNA, worked for weeks during the fires, collecting data about wind patterns and their effects on the enormous amounts of smoke and ash produced by the fires.

The nuclear winter theory holds that the smoke and ash which would enter the atmosphere as a result of a large number of nuclear explosions, would prevent sunlight from reaching the earth and plunge the planet into months of darkness and subfreezing temperatures. The theory has been attacked by many scientists and politicians who see it as little more than anti-nuclear hysteria.

DNA scientists said the fires created good laboratory conditions to test the nuclear winter theory. It is expected that preliminary results will be released in the spring.

Nature's Deadliest Force—More people in the U.S. are killed each year by heat waves than by any other natural phenomena. "Heat waves are the largest natural disasters in the United States," says W. Moulton Avery of the Washington, D.C.based Center for Environmental Physiology. According to government statistics, over the past 25 years the U.S. has averaged 31 people killed each year in hurricanes, 87 killed by tornadoes, 94 killed by lightning, 151 killed in floods, and 200 or more killed by heat.

More people are killed by summer heat than by winter cold according to the Centers for Disease Control, CDC. This is attributed by the CDC to the fact that most people have access to a warm house or heated community shelter in the winter, while in the summer large numbers of people, especially the elderly do not have home air conditioning.

Boom—The FBI has released statistics which show that terrorist bombings within the U.S. rose from five in 1985 to 15 in 1986. Other 1986 bombing statistics show that there were a total of 709 bombing incidents which killed a total of 14 people and injured 185 across the U.S. last year. Property damage from these incidents amounted to \$3.4 million.

Passing The Test-Home medical testing in the U.S. has become an almost \$300 million a year industry. Tests available range from do it yourself pregnancy test kits to blood glucose level monitors for use by diabetics.

Until recently most home test kits were limited to diagnosing or treating existing medical problems. Now however, as biotechnology techniques become more sophisticated new tests aimed at preventing illnesses and disease are reaching the market.

For example, a new home test kit is now available which allows a consumer to check salmonella contamination in the poultry, beef, pork, and dairy products he buys at the supermarket. Approximately 4 million people get food poisoning in the U.S. each year, and of those 40,000 are hospitalized and diagnosed with salmonella, a deadly bacteria. The kit, called "Chik Check," should soon be available on supermarket shelves at a cost of \$3 for a kit of three tests.

Another new preventive-type home test kit is available from a company called "Watertest Corportion" of Manchester, New Hampshire. This test allows a homeowner to test his drinking water for lead contamination, a major cause of brain damage in children who have been exposed to high levels.

And lastly. A new home test kit should soon be reaching the market which will allow parents to test their children for drug use. The kit will be able to detect the presence of marijuana, cocaine, crack, and PCP in a urine sample.

For more about home medical test kits see ASG, Sept. 86, p 52.

Quick Looks-New Jersey has joined a growing number of states that have outlawed the so called "ballistic knife." A bill recently signed by the governor makes it illegal to possess, sell, or manufacture the weapons in New Jersey.

Kansas-The state's first ever nuclear weapons accident training drill was recently held at the Smokey Hill Weapons Range. Participants in the drill included personnel from the Air Force, FEMA, Dept. Of Energy, and local law enforcement agencies. The drill simulated the crash of a military aircraft carrying nuclear weapons.





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TO THE POINT

Dealing with the AIDS epidemic: What's to be done...

T this writing the AIDS (Acquired Immune Deficiency Syndrome) epidemic continues to spread worldwide. While some hope exists for developments in near-term treatments that can ease symptoms or slow progress of this fatal disease, no cure is in sight.

While it's obviously critically important that we fully support scientific research and testing that may lead to a cure in the years to come, it's equally as vital that we devote sufficient resources to educating people about preventive measures they can take now to avoid exposure.

Prevention may indeed be the ultimate solution to controlling this dreaded disease, as appears to be the case in our long battle against cancer.

But even while millions of people are learning how to prevent the spread of AIDS by avoiding exposure, there are millions of people already infected with the virus who are now or most likely in the future will be suffering and dying from it.

Only so much can be done to educate people about the AIDS threat. Inevitably, some, either through ignorance or lack of concern, will continue to infect other people by drug abuse and dangerous sexual practices or perhaps other means of sharing body fluids.

In this country, the local, state and national governments have begun to take action against this danger by moving to close down gay bathhouses, screen blood donors and issue condoms in prisons.

Some people are calling for more stringent efforts to check the spread of AIDS, such as quarantines of AIDS virus carriers.

All forms of quarantine of AIDS-infected persons have been strenuously opposed by homosexuals and their allies in the liberal establishment. Restricting the movement and lifestyles of AIDS carriers in this country and preventing the immigration of AIDS-infected people is inhumane and an infringement on personal liberty and rights, so the argument goes.

Admittedly, there would be hardships imposed on AIDS carriers who were under some form of quarantine, and, no doubt, a good deal of grief as a result of such restrictions.

And imposing even limited quarantine on known AIDS carriers would not be easy, since there are tens of thousands of them in the U.S. alone and an estimated 2 million people in this country may already be infected with the virus.

California voters recently defeated a proposition on the ballot to impose a quarantine on AIDS patients—a reflection that the voting public, in this state at least, did not believe such a restrictive measure was necessary in the battle against AIDS.

I can't help but wonder, though, if this prevailing attitude will change in the years to come should be number of the sick and dying continue to increase as it has been—doubling every year.

It's conceivable that one day, faced with hundreds of thousands or even millions of AIDS sufferers, our society will approve quarantines and other restrictive measures to check the AIDS pandemic.

I think this is quite likely if AIDS continues to spread rapidly and reaches large enough proportions that genuine public alarm over the matter exists.

I hope that if that day comes, society tempers whatever suffering quarantines or other harshly restrictive measures bring to the ill with compassion. We should do everything possible to limit to the bare minimum any hardships resulting from such measures for those people afflicted with AIDS.

A lot can be done now to avoid the troubles and suffering from harsh measures taken to control the spread of AIDS by those groups who are at high risk of getting and spreading it, and those people in contact with them.

We must all take whatever precautions we can now and at all times in the future to avoid exposure and work to insure that those people carrying the virus avoid exposing others to it.

This magazine will continue to print articles on AIDS offering different opinions and ideas about what can be done. We will also seek to publish any new information about the disease that we can find from the scientific, medical and government communities—Jim Benson.





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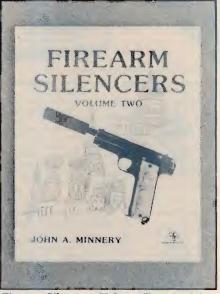
BOOKS/VIDEOS



Combat Fighting Knives, by J.E. Smith, Jr.; EPJ & H Enterprises, Inc., Dept. ASG, 121 East Main Street, Statesboro, GA 30458; softcover, 102 pages; \$13.95 plus \$1.25 postage and handling.

"Have you ever thought about real fighting, and I mean fighting for your life, after your .45 has been emptied?" asks the author. "Chances are that your knife will only be used as a working/wearing piece of combat equipment, and by working I don't mean fighting." Don't expect that in a real-life knife fight that you'll be fighting "a delaying action, waiting for some help to drop by, you'd better be fighting for your life." This book is about combat and fighting knives primarily being used today, and used particularly by members of the elite military forces. "It is not a book about knife fighting techniques, although such techniques will be touched upon. It will be for the most part my opinions about the knives being bought and carried by such individuals who find a knife necessary." Filled with great black and white and color photos of fighting knives and multi-purpose combat knives this book provides the reader with a thorough look at most of the fighting blades in use today and those used effectively in the past by U.S. and other military forces, including the British commandos, Navy SEALs, Army Special Forces, Marines. Sections include the author's definitions of survival, combat and fighting knives, "Knives In Combat-The Military View," custom or private purchase knives, selected folders, a "cross-over" chart with knives listed under specific categories of use, such as combat/survival, and appendices of knife term ("drop point," "Astronaut knife") defini-

tions with illustrations and lists of some of the largest and best combat/survival/ fighting knife dealers and makers.



Firearm Silencers, Volume Two, by John A. Minnery; Desert Publications, Dept. ASG, P.O. Box 270, Cornville, AZ 86325; (602) 634-6242; softcover, 224 pages; \$12 plus \$2 shipping and handling.

Firearms Silencers Volume One was essentially a compedium of silencer patents with a portion of the work dealing with silencers used by the O.S.S. during World War II. In light of recent information, the author learned some of this information was erroneous. "This volume will take a different look at silencers and will show the extent of U.S. and British cooperative involvement in silencer design and application." The book covers silencers development before this century and during this century up to very recently. "The extent of this British-American involvement may come as a surprise to many and lay to rest the sideshow gimmick aspect of silencers.' The generic term "silencer" is used throughout the text, the author states, even though "moderator," "suppressor," or "sound hider" are probably more appropriate. The term "silencers" he notes, "is a parlance generally accepted by the majority of readers." New designs and concepts are also presented and the book's format is divided into two sections so that both historians and tinkerers will find material of interest. Sections include pre-1900s silencing devices, the post-1900 era, 1900 to WWII, WWII and the .22, the silent M-1 Carbine, the silent Sten, the DeLisle Commando Carbine, notes on German WWII silencers, special

(Continued on page 26)

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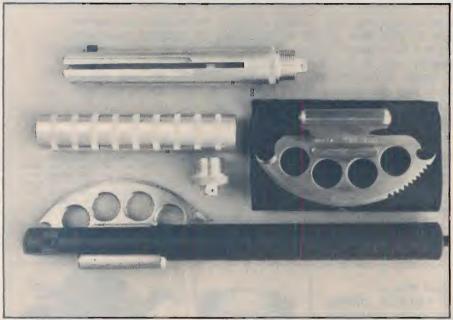
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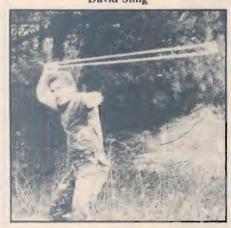
Survival Tool



An amazing new survival tool has just been released by the Oregon firm, Winner Tool. Called the "Pack-Axe" (patents pending), this unique tool is forged from 3/16-inchthick, 440 Stainless Steel and is capable of 12 separate functions, including chopping, slicing, gutting, skinning, nail pulling, wire stripping and cutting, bottle and can opening, use as an axe, a hammer, a steel saw and a three-foot wire saw. The heavy, knurled, three-piece, milled aluminum handle contains a compass, wire saw, waterproof matches, survival fishing/sewing kit or seven waterproof cubic inches of storage for miscellaneous "stuff." The handle is finished with a "fusion-bonded" coating called "Sure Grip," which is resistant to all salts and most acid and

chemical corrosion (take note saltwater fishermen). Built and unconditionally guaranteed to give a lifetime of rugged service to the most demanding outdoorsman or professional. The Pack-Axe comes with a heavy leather sheath that allows the tool to be carried vertically with the handle in its axe configuration, or horizontally on the belt without handle as a skinning/fishing knife. The Pack-Axe is the answer to that age old question, "If you could take only one tool with you . . ." The Pack-Axe is available at a manufacturer's suggested retail price of \$189. Dealers inquiries are invited. For further information contact W. Ward Ryan, Winner Tool Inc., Dept. ASG, 717 N.E. 8th Street, Grants Pass, OR 97526; phone: (503) 476-8508.

David Sling



One of the most famous stories about use of the sling as a weapon is that in the Bible of David and Goliath (I Samuel 17). The

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Dry Gun Lube



E&L Mfg., Inc. now has available a Dry Gun Lube with greater lubricating characteristics through reduced friction. Originally developed for the aerospace industry for use in oil-free environments, E&L now offers the lubricant to the sporting industry. By spraying the inside of the receiver, bolt, bolt carrier and all working parts including the trigger group, dirt, dust and powder residue will not easily adhere to its surface. Carbon buildup will be greatly reduced and a moisture barrrier created against rust, therefore your firearms will stay cleaner longer and the next time you clean your weapons, simply wipe with a clean cloth. A 14-ounce aerosol can is \$9.95. E&L Mfg., Dept. ASG, School House Rd., Cave Creek, AZ 85331; (602) 488-2598.

Bottle Light



Looking for an economical, compact, elegant way to cope with unexpected power failures? The Bottle Light instant oil lamp, with its tapered ceramic stopper and long wick, could be your answer. Compatible with most bottle necks, the Bottle Light is a quick, inexpensive, no-nonsense way to get light when you need it, where you need it. There's no more searching for an oil lamp that fits your decor. Burning cleaner than oil lamps, the Bottle Light also is useful when you simply want a candlelight atmosphere. The Bottle Light is a real Yankee value when you consider how few useful things you can buy for less than a \$5 bill. Made in Maine, the Bottle Light is available for \$3.75, including shipping and handling, from R.A. McNeill, Dept. ASG, Box 705, Gray, ME 04039.

Sheep Hunting Video



PSE Adventures in Video's newest production, "The Double Challenge for Rams," is now available at video stores and PSE dealers across the country for both rental and purchase. This newest of six PSEproduced videos features PSE President Pete Shepley as he hunts two species of North American Wild Sheep with bow and arrow in some of the most magnificient country offered in the region. Shepley successfully hunts the coveted trophy Desert Bighorn in the Grand Canyon of Arizona, and the video footage includes spectacular photography of this unique animal in his habitat. Then, it's on to British Columbia, where Pete stalks the Stone Sheep in the snowy northern Rockies. "The Double Challenge for Rams" can be rented at most authorized PSE dealerships. For purchase or PSE Video Club information, contact Todd Elliot, PSE Adventures in Video, Dept. ASG, P.O. Box 5487, Tucson, AZ 85703; (602) 884-9065.

U.S.-Made UZI



The legendary UZI submachine gun, as designed by Major Uziel Gal, has been manufactured completely in the U.S.A. and is now available to individuals and dealers from Automatic Weaponry of Brentwood, Tennessee. Crafted from materials which meet military specifications, and using modern computerized equipment, the parts in the 9mm submachine guns were made to be interchangeable with both the Israeli and Belgian produced versions. Several improvements have been incorporated into this American counterpart, such as a parkerized finish, hard-chrome lined barrel and heat treating throughout. The

.22LR and .45 ACP conversion units as well as other optional equipment make this an excellent choice for the full-auto enthusiast. Ownership of the UZI submachine gun design can be both easy and uncomplicated. Under federal regulations, the purchaser need be 21 years old, a U.S. citizen, and have a clean record with no criminal charges. Although proper paperwork must be submitted for transfer approval, it is supplied by Automatic Weaponry. For more information on the U.S. made UZI submachine gun design and machine gun ownership, contact: Automatic Weaponry, Dept. ASG, P.O. Box 1124-A, Brentwood, TN 37027; (615) 371-9141, 9am-5pm CST.

Plastic-Cased Ammo



Seven years of research and development by the United States Ammunition Company has resulted in the production of a revolutionary ammunition concept. "Our new plastic-cased, reloadable pistol ammunition is the most exciting break through in ballistics seen in my lifetime.' said Mike Hutchins, USAC vice president in charge of production. He added, "The present .38 Special being produced in 148-gr. WC, 150- and 158-gr. SWC, and 158-gr. RN exceeds SAAMI industry standards." This claim has been verified by the prestigious H.P. White Laboratories in Street, Maryland. Their test to evaluate pressures, velocity and accuracy of this new plastic-cased ammunition produced 50-vard, five-shot targets with an average group size of 1.5 inches, well within the SAAMI 5-inch specification. Hutchins says, "That while the accuracy and reliability are amazing to shooters who try our ammo, what really mesmerizes them is the ease at which it is reloaded." A simple hand-held reloading system offered by USAC permits easy hand loading at home or in the field. Spent cases are deprimed using a special depriming pin in the handheld tool. Fresh bullets are firmly positioned with a squeeze of the tool, following priming and charging of the case. "Because the plastic cases are not deformed when fired, no resizing, trimming or crimping is required when reloading," Hutchins added. "USAC ammo is very price competitive and is a welcome development to the active shooter," said Hutchins. Shooters, reloaders, dealers, wholesalers and distributors can write USAC for product information by contacting them directly at United States Ammunition Company, 4500 15th Street East, Tacoma, WA 98424.

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MAIL CALL

AIDS Article Criticism

I have just completed reading the August issue and feel the need to comment. On page 34 you have reprinted an article from the Journal of Civil Defense on AIDS which I feel is totally inappropriate, inflammatory, and a type of mentality that I assumed your publication was against. This mentality is the "sky is falling," hysterical attitude that prevails in much of our population. It appears that you are feeding into this attitude with this article. The whole article is filled with half truths. innuendos, and fear tactics which as a professional health care provider I find appalling. I have here in my office three publications specifically dealing with the issues of AIDS. They are, Surgeon General's Report on AIDS; American Red Cross-AIDS, Sex and You; and Be Informed About AIDS (Information for health care personnel and other care providers). Each one of these publications contradict many of the statements in the article you reprinted. Further, as a professional working in the forensic psychiatry field, I am responsible for teaching both our patients and staff about AIDS. Thankfully my patients cannot obtain a copy of this publication, it could cause untold concern regarding the myths that I am trying to expell. However, the staff could obtain a copy and as most Americans, they would believe more what is written than the inservice I can give them. If you are going to print material of this type I feel you should follow the article with names and addresses of other publications, articles and or reports for people to compare and maybe make an intelligent assessment of the issues. My first reaction to this article was "a knee-jerk response." I was tempted to throw the whole magazine across the room in anger, then I thought of never purchasing your publication again. However there are many good articles and a lot of good information that your publication has offered me personally, professionally and as a neophyte survivalist. There are other ways to obtain the information that your publication provides, though not as easily, nor as cost effective as your publication. Up until now I have been pleased with your dedication and professionalism in bringing information to bear. I hope that this article was just a "fluke" and not indicative of future editorial management.

Glen E. Hicks Jr., R.N., C. Whitfield, Massachusetts We're surprised that your reaction to this article was so strong. You say you wanted to throw the magazine across the room? You must've been upset. We did get one other letter which criticized our use of this article but otherwise, response to it was favorable. We recognize that the article engaged in some speculation about AIDS, such as saying that it may not be that "casual contact," or all forms of it, does not transmit AIDS, but we do not see this as "hysterical." The author, a physician, is a member of the group, Doctors For Disaster Preparedness, and as such is concerned about epidemics like the AIDS epidemic and their consequences. Other health officials have predicted that millions will die from this disease in the years to come. The author recognizes this and calls for a "Manhattan type" project to conquer AIDS before many more people are infected and dying from AIDS. How is this taking a "sky is falling" approach? We don't want to lose you as a reader but we disagree with your reaction to the article. We have run numerous articles on AIDS in the past using sources like those you mentioned. Dr. Klinghoffer merely offered another perspective on the subject which, while expressing strong opinions, we do not see as hysterical or sensational.

Forest Creature

Your article on Bill Moreland's 13 years in the western wilderness really knocked me out. I first heard about him around five years ago and I have wanted to know a lot more ever since. I think your stories of this nature are the best part of your magazine and I would really like to see you start a "Survivor of the Month" feature. Although Ragnar Benson has long been one of my few favorite outdoor writers, there are a couple of things in the article that I'm having trouble understanding and I would like to have them clarified. Is it possible for a sleeping bag to be soaking wet in -20degrees F winds, especially with no one in it? Wouldn't it be a solid cake of ice? The statement is made that when trapped in a storm, he only had a couple of piney squirrels (to eat) for five weeks. Then it reads, "twice he went five days without getting anything at all to eat." This doesn't seem to compute. I suppose a lot of fat bears have been killed with .22 rifles but it seems a mite risky. Could you enlighten me as to what distances this could be accomplished at and where the aiming point should be? I understand that this should only be attempted in extreme cases

but a .22 probably would be the most widely and commonly used survival firearm.

> D.S. Spurling Columbia, Maryland

We don't have enough of these human interest survival pieces to run one every month. But we do have a few more on file which we will be using in upcoming issues and we're looking for more. We'll continue to use them as often as we can get them. Regarding your questions about seeming unrealistic or inconsistent descriptions in the article, we have to rely on our writers to provide us with factual information in their work, but like all writers everywhere, mistakes are sometimes made, especially where information is taken from researched materials and rewritten. Still, we don't see the things you are questioning in the article as necessarily untrue or inconsistent. We think it's possible that a sleeping bag, shielded from the wind by canvas and next to a fire, could be wet and not frozen solid. Likewise, we don't know what Bill Moreland did or did not to have to eat in the time he was supposedly trapped by heavy snows after a storm. The information about this time that was available to the writer was probably sketchy at best. And we are not authorities on killing bears and couldn't tell you how it's done with a .22 or where to aim, although we agree that this must not be easy, and we would not want to attempt it. Who knows

what the exact circumstances of these situations were? Anyway, we'll be running more such accounts of human survival as often as we can.

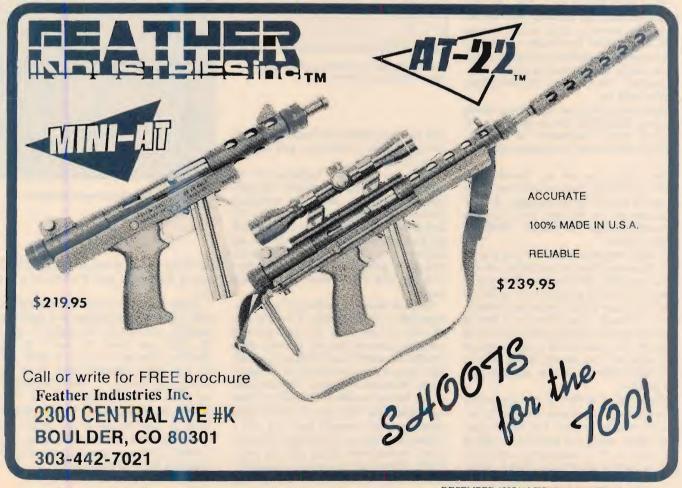
Food Product Expiration Dates

There is something that has been bothering me for a long time. Most of the food companies do not put on expiration dates-that I can understand-on their products. I would like to see all of the food product producers put one on their products so that I will have an idea as to how long the products are good for. I do rotate my food supplies on a regular basis but I want to be able to know what will keep and what won't. Could you please possibly give me an answer to this puzzling question by finding out what the letters or code numbers mean? I know that I am not the only one puzzled by this.

> Name Withheld Idaho Falls, Idaho

Many food product producers do put expiration dates on their products and these, while sometimes hard to find, are usually somewhere on the exterior of the product package under the words, "Use Before . . . " or "Sell By . . . " etc. Duncan Long, in his article, "Finding Food After A Nuclear War" (December 1986 ASG), has this to say about shelf life of stored foods: "Foods have a finite life during which their nutritional content remains high. Once

this time is exceeded, the nutritional value of the food gradually drops off, Food will remain eatable for some time but it will not necessarily supply all your nutritional needs. Nutritional shelf lives of stored foods are short. Most canned food (whether in cans or jars) has a life of only six months (though the food will be eatable for longer). Canned meats and non-citrus fruits last a big longer; they have some food value for up to a year. Evaporated milk has a nutritional life of six months; boullion, instant cream, nuts, cereals, and hydrogenated (or antioxidant treated) fats/vegetable oil all have nutritional shelf lives of a year. About the only things worth eating after a year are coffee, tea, cocoa, candy (that isn't nearly 100 percent sugar), or spices like sugar, salt, pepper, etc." We understand some grains stored properly in bulk, such as hard red winter wheat, will keep for longer periods. These statements by Long have been disputed by one of our other contributors, Robert C. Smith, who contends scientists have tested 100-year-old canned goods and found the nutritional value of the contents to be high. As usual, there are differing opinions on the subject. We suggest you read all you can on food storage in this magazine and any other sources you can find and decide for yourself how long and under what conditions storage foods will keep. In the end, you'll have to use your own judgment about what to do.



Winterizing Your Wheels

Old Man Winter has stacked the deck against the internal combustion engine . . .

By Ralph Zumbro

OLD weather means more to a driver than slippery going. Sometimes it's a struggle just to get moving at all. Batteries seem to lose their zap, oil thickens up, tires freeze to the ground . . . and even your coolant can freeze solid, breaking your engine block. Old Man Winter has stacked the deck against the internal combustion engine, but there are ways of ensuring a royal flush on a cold morning.

First off, let's go through some of the more common problems, and look at the cures. You got home last night after working late, the wife was asleep, and you missed the 10 o'clock weather. Waking up in the morning, you find that the season's first cold front dropped six inches of snow on the crate you left in the driveway because the garage was full of junk.

Your belly full of hot coffee, you step gently out onto the suddenly cold and inhospitable driveway, stick the key into the lock and it won't even budge. Back into the house for an extension cord and a hair dryer. While you're thawing out the lock, it wouldn't hurt to melt the windshield wipers loose too.

Once you're into that icy vehicle, facing a snowy windshield, the key goes into the ignition which, fortunately, isn't frozen. Twist-click-unh-grrr, the engine says. Now what?

Jack Frost has set up housekeeping under your hood, and the only way to get started is to evict the little bugger. A jump start may get you running, but it can also seriously damage the starter, driving it against stiff oil.

If high amperage electricity and a good electric space heater are available, you can have your wife tell the boss that you're going to be about an hour late, while you aim the heater at the engine and battery. This is critical. The battery can lose as much as half its cranking ability from cold weather. You must warm it up, as well as the engine oil. I've sometimes had to put a hot plate under the oil pan, and also heat the battery.

Okay, the oil is thinned out, the battery is warmed up, she cranks over nicely, but doesn't even try to start. You run through the quickie spark and fuel checks, lifting the coil wire off the distributor, and stroking the carb to see if there's fuel in there.



This snowfall was *not* predicted, and the house is one mile from the payement.

The bad news is that you don't have either. The good news is that your wife says the boss is stalled too.

But just what has happened to the engine, you ask yourself. Mostly, the problem is solidified moisture, commonly known as ice. Popping the distributor cap and giving it a fast wipe out will normally get your spark back. But if there was any moisture in your fuel line, it is now solid, and you're going to have to go under there with the hair dryer—there ain't no easy way.

Another electrical problem is corrosion, especially in coastal areas. You have only 12 volts to work with, and each point of corrosion can cost you one of them. Most cruddy connections are fairly easy to find, but one will drive all but the most experienced troubleshooter nuts. The lead alloy of the battery terminals and cable clamps can deteriorate. The sign of this is a slight purpling of the normally grey lead, and a noticeable pitting of the surface. The only cure is replacement of the affected parts. Cable clamps are relatively inexpensive,

A simple engine heater can save thousands of dollars — or a life.

but if the battery posts are gone, so is the rest of the battery, and it's time for a new

Ahah! You went all the way through the drill, and she's now ticking over smoothly. Sensibly, you wait for the engine to warm up while you brush the snow off the windows. You get in, put it in gear, wait for the thick, sluggish fluid to get up through the trannie . . . and with a sickening thud the engine begins to die. Your wheels are frozen solid to the ground. Well, by now the last of the coffee's too thick for human consumption, so you pour it where the frozen tires meet the ground, and head for your sweat shop.

Prevention—Now, let's take a look at what you could have done if you'd seen the weather report, and taken a few emergency precautions. We'll assume that you're out in the suburbs or exurbs and no stores are open, and you weren't about to get under the vehicle and change to a lighter weight oil at night.

As you drive up and park, get out and put unfreezable pads under those hot tires—such as corrugated cardboard or wax paper. That way, they'll not get locked to the concrete by ice as they cool down. Next, drag out the extension cord, and run it through the grill so you can close the hood without cutting it. A 100-watt bulb, hung between the engine and battery, will keep them warm down to zero.

When the snow starts to accumulate, it can be put to work as an insulator. Shoveling snow up around the body will protect that precious pocket of warmth from high winds and chill factors. This simple trick will get you started most of the time, while your neighbors are grinding away.

If you are out in the hills away from the miracle of electricity when winter catches you, the problem is more serious, but still solvable. Our grandfathers in the early part of this technological century had a few tricks that have almost been forgotten. The prime cure is heat, applied to both the engine and the battery.

A kerosene lantern, or Coleman lamp, placed under the engine, or between it and its battery, will provide sufficient heat. Remember, however, that this is a raw flame and there is a danger of fire. One wintery day, I had to get a Jeep started by building a fire, covering it with a thick layer of dirt, and then pushing the vehicle over this impromptu heat source. Alternatively, you could shovel dirt from under your campfire under the engine, and insulate the area with snow.



Oil, Battery Trouble—Hard winter starting essentially breaks down into two separate problems: Thickened oil and reduced battery capacity. Over the years, the automotive industry has sought many cures for these two bugaboos, and they're slowly winning the battle. Multi-viscosity oils and high-crank batteries are the most recent weapons. Back in the so-called good ol' days, we had to resort to such tricks as thinning the oil slightly with a half cup of gasoline before shutting the engine off, and taking the battery in the warm house at night. Next morning we had to let the gasoline evaporate out before driving off.

The effect of a temperature change on a battery is so marked, that for many years a

folk rumor circulated around that placing a battery on a concrete floor would discharge it. What actually happened was that the lower temperature of the cement cooled the battery, reducing its ability to release electrons. Above all else, it has to be understood that a lead-acid battery is a little chemical plant. Heat speeds up a chemical reaction, and cold slows it down. A battery that has been cooled to zero degrees, has had half its assets frozen.

The chemical reaction inside the battery is fairly simple. When a dilute solution of sulphuric acid is placed in contact with lead, it plates itself out on the lead, creating a chemical called lead sulphate. In the process, it creates about two volts of electricity, and a small amount of hydrogen gas. The process can be reversed by applying electricity, or charging. The voltage is a constant, resulting in a need for six cells to provide 12 volts. Amperage, or the amount of electrons released, is controlled by the surface area available for the reaction between the lead and the acid. And therein lies the ruh.

Not only is the reaction controlled by temperature, it is affected by mechanics. Once a given volume of water has released its molecules of sulphur, it has to move out of the way for the operation to continue. This is what is happening when a discharged battery miraculously recovers some of its energy. When these two factors, temperature and motion, are understood, we can see some remedies for a supposedly decreased energy source. We can, for instance, simply take the battery in the house and let it warm up. Then swiftly put it back and fire up. Also, gently rocking the battery will cause motion at the plates. Heating one side only will cause a convection current that will move the



(Continued on page 68)







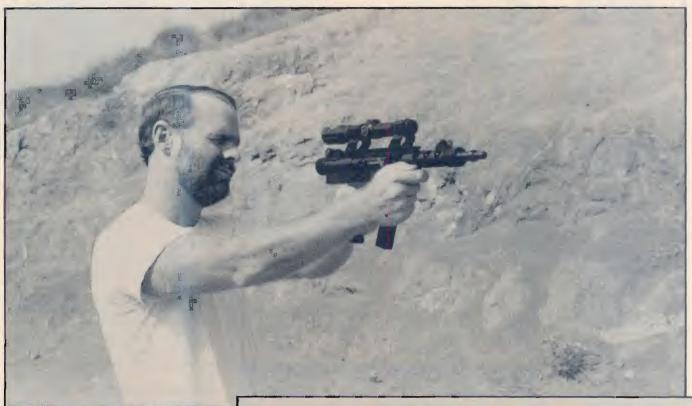


Feather Industries:

Mini-AT Pistol

A lightweight, semiautomatic firearm for hunting, plinking, self defense...

By Jim Benson



NNOVATIVE and unique" are the words used describe the Mini-AT pistol and AT-22 carbine in the brochure from the manufacturer, Feather Industries. And these new guns are indeed different from your average semiauto rifle or pistol .22s.

Made of aircraft aluminum, steel and nylon, these sleek-looking black beauties look like something out of *Star Wars* but their operation is simple blowback.

We reviewed the AT-22 carbine when it came out two years ago (see the December 1985 issue of ASG) and found to be a nifty and reliable little gun. With empty magazine the carbine weighs only a little over three pounds.

Now the pistol version is out, the Mini-AT, and it is basically a shortened AT-22, operating with the same type of bolt and firing pin and receiver. Some of the parts are the same as those on the AT-22.

We put our test Mini-AT on the postal



The Mini-AT is shown here fitted with optional Weaver-type mount from Feather Industries and Burris 3X pistol scope used in test firing. The pistol comes drilled and tapped for the mount.





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Mini-AT Pistol



In bench-rest testing at 50 yards zeroing was not completed but testers did find the gun is accurate. The 1-inch, 5-shot group above the chicken's head was accomplished using a Hoppe's Expert's Bench Rest and the Burris scope.

scale at the office and it weighed exactly 2 pounds without empty magazine, which adds 5 ounces. The Mini's 20-round sheet metal magazine is the same one that fits the AT-22 and is interchangeable with the AT-22.

Like the carbine, the pistol's receiver is machined from aircraft aluminum. The 7-inch barel and bolt are steel.

Both guns field strip and can be reassembled in seconds without any tools, so maintenance and troubleshooting are a snap.

The pistol's rear sight is a square notch type adjustable for windage and elevation. Front sight is a post with protective wings. wings.

One of the first things you notice about the Mini-AT is its length—our test gun was a little over 16 inches overall. This gives you a good sight radius for a handgun, improving accuracy.

The light weight of the Mini makes for easy handling while shooting and sighting with either one or two hands.

Testing-We picked up a few boxes of standard commercial .22 Long Rifle ammunition-Winchester Super X High Velocity, Remington High Velocity and CCI Mini Mag-and headed out to try this Space Age-looking gun. We went first to a public shooting area and tried shooting it at targets and just general plinking with slow, aimed fire and rapid fire strings.

Both at the open public shooting area and later at a private gun range we use, we had only a few problems with jams. These were stove pipe jams, about three such

(Continued on page 38)

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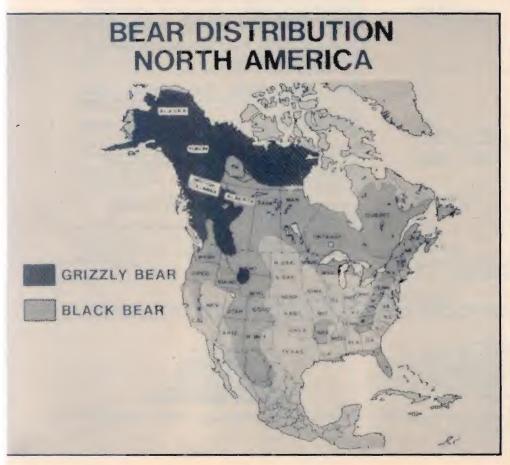
Blacks, Grizzlies:

Avoiding/ Surviving **Bear Attacks**

There is no formula for completely removing the danger of bear encounters . . .

By Bill March and Jeremy Drought

The material for this article was extracted from Forest Hazards, a slide booklet production of the University of Calgary, Outdoor Pursuits Program-The editors.



N in-depth look at the Black and Grizzly Bears and the potential danger they may present to the outdoor enthusiast. Suggested precautions and procedures to avoid attacks and minimize the possibility of death or injury in a chance encounter.

The two major species of bear in North America are the Black Bear (Ursus americanus) with an estimated population of approximately 500,000 and the Grizzly Bear (Ursus arctos horribilis) with an esti-

mated population of 35,000.

The Black Bear is found in 40 of the lower 48 states. Alaska, northern Mexico and in every province of Canada with the exception of Prince Edward Island. The Grizzly Bear is restricted to Alaska, the North-West Territories, Yukon, British Columbia, Alberta and parts of Montana, Idaho and Wyoming. Both bears' behavior is complex and often unpredictable, consequently, it is extremely difficult to give appropriate advice to follow in all situations.

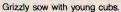
There are four general stages of bear behavior. (1) Bear having a natural fear of people based on the long history of hunting by man.

- (2) Bears not afraid of people but rather habituated to contact with humansmeaning the bear became accustomed to human contact and human activity. Bears get used to the sight, sound and smell of human beings; they do not get food from them nor are they harmed by them. Thus the bear simply gets used to people, will tolerate them at closer distances and will often ignore them.
- (3) Bears that are food-conditioned they eat human food and our garbage and behave quite differently from merely habituated bears. Food-conditioned bears have learned to associate "people" with "food" and are usually somewhat habituated to the sight, sound and smell of human beings.
- (4) Bears that regard people as a source of food and prey upon them, attack and eat them. This is a recent phenomenon of bear behavior and accounts for an extremely small number of bear attacks. Interestingly, there are more documented cases of this occurring with the Black Bear than with the much more powerful and feared Grizzly Bear.

The most comprehensive statistical information on bear attacks has been compiled by Stephen Herrero who cites 23 deaths from Black Bear attacks in 80 years (1900-1980) and 41 deaths from Grizzly Bears in the same time period, of which 22 occurred in Alaska.

The Grizzly Bear is documented to have been involved in 143 major incidents resulting in 165 injured persons, mainly in the national parks. It is interesting to note that 80 percent of the attacks involved only single people and 20 percent involved two or three people. There was no evidence that larger groups had been attacked.





An analysis of these attacks reveals that 71 percent of injuries inflicted were by a mother Grizzly Bear with cubs. A more detailed examination of statistics reveals evidence of changing Grizzly Bear behavior.

In September 1976, Mary Pat Mahoney was dragged from her tent at 7 a.m. by a Grizzly Bear and killed. She had followed all the standard precautions: no cosmetics, no smelly food and was not menstruating. One possible reason for the attack could be that the bear regarded the human as a source of food and actively preyed upon her. This would explain dragging her body away as Grizzlies may partially bury a carcass and return to feed on it later.

An examination of the Black Bear attack statistics showed that of the 23 deaths since 1900, 11 occurred between 1964 and 1980, and of these, 6 bodies showed indications of being used as a food source by the attacking bear. Half of the victims were people under the age of 18 and this is strong evidence to suggest that the majority of fatal attacks were from bears regarding the human as a food source.

On May 26, 1983, in Nipawin Provincial Park in Northern Saskatchewan, Larry Reimer was attacked by a Black Bear while fishing. Reimer dived into the river to escape the bear and was pursued. In the ensuing struggle he managed to kill the bear with his filleting knife. A subsequent autopsy of the bear revealed human

remains in its stomach from another fisherman he had killed and partially eaten earlier!

In over 500 incidents of Black Bear attacks in National Parks between 1960 and 1980 documented by Herrero, only three cases required hospitalization beyond 24 hours.

Outside of the parks, 32 cases of serious injury are recorded *including* the 23 deaths mentioned earlier. Obviously, it is a very small number of Black Bears which have reached the behavioral stage of preying on humans. Why this change? Predator bears are always shot and examination of remains reveals no explanation—they are not rabid, starving or in poor condition.

One possible explanation is the increasing pressure on the bear population from people hiking and camping in the wilderness. Previously a greater number of the people in contact with bears were hunters and the animals were conditioned to fear man.

Although the number of Black Bears behaving as human predators is extremely small, is there the possibility it will increase? Furthermore, will the same type of behavior manifest itself in the Grizzly Bear? This latter prospect is at least disconcerting since the Grizzly is quite a different creature, much more powerful, much larger and even more unpredictable with a notoriously bad temper.

Identifying Bears-It is important to be

able to distinguish between the Black Bear and the Grizzly Bear, especially in areas where they have adjacent or common habitats. The overall color of a bear's fur is not a reliable means of correctly identifying the species. A Black Bear may vary in color from black through all shades of brown to cinnamon and even blond. Two useful identifiable characteristics are the white or off-white chest patch and the light colored snout.

Yearling Grizzlies in Banff National Park.

Black Bear and cubs

Black Bears vary in size according to age and gender. A mature male may weigh up to 700 pounds, while a female may vary between 200 and 400 pounds. Size, therefore, is not a really accurate criterion for distinguishing between a Black and a Grizzly. The Black Bear is more agile than the adult Grizzly and, unlike its more powerful cousin, is able to climb trees.

Although the overall color of a Grizzly Bear varies as much as the so-called "Black Bear," the tips of hair around the neck, shoulders and flanks are often flecked with white, giving the bear a "grizzled" or silver-tipped appearance.

The two distinct features of the Grizzly Bear in the side profile are its distinct shoulder hump above the forelegs and the disc-shaped concave nose profile. From the front view, it has a distinct mutton chop jowl. The front claws of the Grizzly are much longer (1.5 to 3.9 inches) than those of the Black Bear. The weight and size of he Grizzly vary tremendously

Avoiding/Surviving Bear Attacks

according to age and gender as a mature male weighs between 300 and 1,300 pounds, and the female between 200 and 600 pounds. It is important to remember that when a Black Bear drops its head below the shoulders, a hump becomes apparent, but it is *not* as prominent as a Grizzly's hump.

Bears may hibernate in their winter dens from two to seven months, depending on the severity of the winter. The hibernation period is spread between November and May. In hibernation, they may lose 15 to 40 percent of their body weight, and the cows will have nursed their offspring (usually two) after birth in mid-January. The bear's main occupation during the spring, summer, and fall is eating, recovering from hibernation, and laying up fat in preparation for the next winter.

A knowledge of a bear's eating habits and food sources is invaluable in avoiding them in the wild. In the spring, bears will seek food on early "green up sites," e.g., in western Canada, south-facing avalanche slopes and sub-alpine meadows, which are snow free early and are favorite sources of food. Sources of food would include grasses, wild flowers, roots, bulbs, and tubers. This diet may be supplemented by carrion and ground burrowing rodents. As spring moves to summer, bears may move from south- to north-facing slopes following the "green up" cycle, since the new growth tends to be higher in protein

content.

The best advice is to recognize abundant food sources and avoid them as possible bear sites. Throughout the summer, insects, larvae, grubs, and eggs as well as wild honey provide a source of food. Both species take live and dead mammals if they are available, e.g., newborn ungulates in the late spring and early summer. Fish may be taken throughout the year, consistent with the time of the local spawning or run.

In late summer and early fall, both species fatten on berries-huckleberry, salmonberry, crowberry, bearberry, buffalo berry, cranberry, strawberry, sasparilla, devil's club, etc. Stay away from large berry patches at this time of year. Foods favored by the Grizzly Bear include willow, catkins, horsetails, buffalo berries, hedysarum, and bulbs, tubers, rootsplants which contain nutrients for the coming season's growth. Foods favored by Black Bears include dandelion heads, the cambrium layer, or sapwood, of trees, salmonberry, devils club, cow parsnip and angelica. It is beyond the scope of this article to provide illustrations of all these plants, and it is recommended that the readers become familiar with them by studying the relevant botanical field guides.

Preventing Attacks—One of the best ways to prevent attacks is to recognize

signs of bear activity and avoid their territory. The signs of bear activity are tracks, scats, tree markings and diggings. There are three characteristics of tracks which can be useful in determining whether they belong to a Black Bear or a Grizzly Bear:

1. The longer the distance between the toe and the claw prints, the greater the possibility it is a Grizzly, i.e., front claws 1.5 to 3.9 inches in length, hind claws 0.6-1.8 inches (Herrero 1985).

2. Toe spacing. A Black Bear's toe tracks are usually separate and the Grizzly Bear's toe tracks may be joined. When the ground is soft, it may be difficult to identify toe separation.

3. The arc or curvature of the toe prints. The Black Bear's tracks are characterized by showing a greater arc or curvature of the five toe points.

If one can find a clear imprint of a bear's tracks, the following simple measurement, using some sort of straight edge, will determine whether the tracks are those of a Black or Grizzly Bear. Line the straight edge up with the base of the big toe track and along the top of the pad imprint. Upon extending this line, if it should pass below the mid-line of the small toe print, the tracks are those of a Grizzly.

If the extrapolated line passes above the mid-line of the small toe, then the tracks are likely that of a Black Bear (Herrero, 1985). The freshness of the tracks may be deduced from their clarity of imprint,



Constructed food storage facility.



Grizzly scat in Monashee, British Columbia.



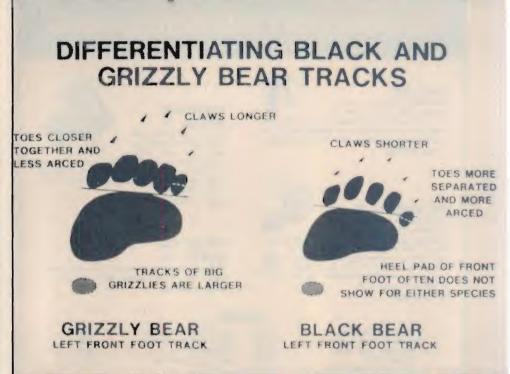
Tree scrapings — signs of bear activity in the area.

hardness of ground, and recent weather sequence. Tracks of a family group (mother and cubs) indicate a high danger potential since many serious bear attacks arise from a mother defending her cubs.

Bears tend to travel along lines of least resistance, using game trails, foot paths, cutlines, roads, water courses and ridges. Black Bears are essentially a more forest-oriented species, seeking small openings when the sun breaks through the canopy to stimulate plant growth (meadows, stream edges, clearings) as their feeding grounds. Grizzly Bears frequent the snow-free subalpine meadow in high summer, but are also quite at home in the less open environment where meadow and forest meet. Cover is sought more particularly by the Black Bear for shade, shelter and bedding.

- It is difficult to differentiate between Black Bear and Grizzly Bear droppings, although the droppings themselves may give backcountry users a clue as to the bear's whereabouts:
- 1. Age. Generally speaking, the more moist and soft the scat appears, the more recent it is, unless there has been recent precipitation. An examination of the vegetation under the scat may also provide a clue as to its age, as will the presence of insects or larvae.
- 2. Composition. When the scat is black, runny, and odorous, possibly with some hair present, it is indicative of meat in the diet. Since bears may remain close to a kill or carcass for a number of weeks, it could be inferred from such a scat that the owner is still in the vicinity. The content of the scat will also provide evidence of where the bear is feeding so that those areas can be avoided. Any evidence of garbage in the scat (plastic, aluminum foil, etc.) suggests that the bear is garbage conditioned and may be unafraid of humans.
- 3. Numbers. Numerous scats (3 to 10) in a small area, together with hair in trees and depressions in the ground, all within a 10-yard radius, may indicate a bedding area. More scats may indicate a prolonged food source and feeding area.

Occasionally, trees on well used trails may be marked by bears, perhaps as a means of communication or delineation of territory. The damage may be extensive and obvious, or a few scratches and claw marks which are detected by close examination of fresh running sap. Both Grizzly and Black Bears overturn rocks and tear old rotting logs and stumps apart searching for insects and grubs. The digging up of roots, bulbs, tubers and small ground-burrowing mammals (marmots, chipmunks and squirrels) is usually more indicative of Grizzly Bear activity. The size of the digging may vary from a single scoop to an area extending to several hundred square feet. The age of the digging may be determined by examining the state of the vegetation buried by the excavated earth and the freshness of the earth itself.



Encounters—It is impossible to avoid all bear encounters and obviously everyone should have some plan of action in the event of a chance encounter. It is important to remember that not all encounters result in an attack. There are four main situations in which a bear might attack a human being:

	Grizzly	Black
1. The bear feels crowded		
by human presence.	Yes	Yes
2. The bear feels		
threatened by human		
presence. This is		
especially the case when		
encountering a sow with		
cubs.	Yes	Yes
3. The bears are seeking		
food, because they are		
habituated or garbage		
conditioned.	Yes	Yes
4. The bears regard	More	
human beings as food.	likely	2
In this case humans are	at	in the

Animal behavior is complex and unpredictable, depending on a great number of variables. The response to an attack will depend, to some extent, on the specific circumstances and the immediate environment, as well as the size and condition of the party and the bear. What works in one situation may well not work in another, and the following are suggested guidelines.

night

day-

prey and the bears are

predators.

Action to take when you encounter a bear:

- 1. Congregate in a group and stay calm.
- 2. Choices:
- a. Stand your ground. Wave your arms about and talk loudly (but in a non-threatening manner) to the bear to warn the bear of your presence and let the bear know who you are.
- b. Retreat. Back off slowly and promptly. Do not run. Do not take your eyes off the bear, but do not stare directly at it either. Move toward cover (a large boulder or tree) in order to put some object between you and the bear.
- 3. Climb a tree. You must allow yourself adequate time to climb at least 30 feet (10m) up a tree. Remember, bears can move very quickly and you need adequate time to climb high enough to be safe. Many people have been dragged down out of trees before they have gained a safe height. Black Bears can climb trees and may climb up after you.
- 4. Dropping your pack may distract the bear and give you time to seek refuge/cover. Keeping your pack may protect your body if you decide to play dead.
- 5. Fight back only when the bear is acting as a predator. Use any/every possible weapon. Put an object between you and the bear. Use noisemakers, shout, clap your hands, bang pots and pans, flares, bird scarers, fire, flashlight, and any repellent sprays/devices. It is especially

(Continued on page 48)

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(Continued from page 10)

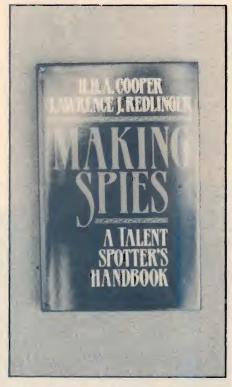
ammo, postwar trends to the present, silencers designs including illegals and homemades, revolvers and shotguns. There are also appendices with notes on silencer testing and noise levels and corrections for Volume One.



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(Continued on page 30)



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Fallout, Blast:

More Do-It-Yourself Shelters

Nuclear weapons protection you can build yourself . . .

By Marcel M. Barbler

(Marcel M. Barbier has a Ph.D. in electrical engineering (Zurich, Switzerland, 1950) and a Ph.D. in physics (Paris, France, 1954). He was radiation safety officer at the European Organization for Nuclear Research, Geneva, Switzerland, from 1964 to 1973, and has been a consultant on radiation hazards in the United States since 1973. His company, Marcel M. Barbier, Inc., P.O. Box 2905, Reston, VA 22090; phone (703) 860-1275, was established in 1980 and designs and builds shelters—The editors)

NDERGROUND construction is inherently difficult. The structure has to carry the weight of the earth overburden. It has also in principle to resist an earthquake to a certain point. In case it is a nuclear blast shelter, it must additionally withstand the air overpressure wave (airslap) from above, and the ground shock waves (similar to seismic waves).

Fallout Shelters—We begin with the fallout-only shelters, for locations remote from potential targets. In principle they have not to take the airslap from above and the ground shock waves from the sides and below, as blast shelters do.

Whereas our company has developed adequate blast shelter designs, which incidentally can also be built by do-it-your-selfers with construction experience (as will be shown in the second part of this article), there was a feeling that a design for a fallout-only shelter could be arrived at with simpler construction methods.

One such method is to use ferrocement. One erects a skeleton of thin rebars having the shape of the structure and places over it several layers of hexagonal steel wire mesh. One applies a thin layer of mortar by hand with a trowel on both sides. A total thickness of less than an inch is adequate. One adds proprietary admixtures to the cement, which have the effect of making the mortar extremely strong. The strength of the shell obtained in this way is given by its curvature, and the fact that it is embedded in soil, gravel or sand. Gravel or sand are recommended in earthquake prone areas, as they "lock" under pressure and build an arch around the

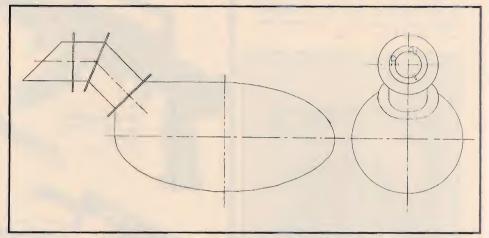


Figure 1. Fallout shelter structure.

structure which gives some protection against seismic waves.

The shelter configuration we have arrived at is shown in Figure 1. It is a small shelter that could sleep about nine adults (two or three families). It takes its strength from its doubly curved egg shape. It has a one-bend entranceway which prevents direct radiation from fallout on the ground or on top of the earth covering the shelter to penetrate inside. The mechanical efforts coming from the entranceway are transmitted to the shell tangentially through special shaping of the hull in the entrance area. Additional collars provide strength to the entranceway at the door, the bend and junction with the shelter.

As there is no blast, the door could in principle be of any material one likes, like wood for instance, and the air intake and exhaust vents could be of plastic. However, to discourage intruders, a stronger metal door has been especially designed. This door also carries metal vents passing through its frame, and incidentally could stop hand gun shots if covered inside with a layer of mortar. A typical shelter door opening inwardly (without vents) is shown in Figure 2.

Blast Shelters—We come now to the blast shelters, which have to be much more resistant. Appropriate shapes and concrete thicknesses from about six inches upwards with adequate steel reinforcement are required for these shelters.

Figure 3 shows our new design especially developed for do-it-yourselfers having



Figure 4. Typical shelter entrance.

some reinforced concrete experience. It is in principle designed to sleep up to 11 adults.

The work proceeds as follows: First the reinforced floor slab is poured with dowels sticking out to tie the vertical walls. Then a skeleton of the dome is erected with prebent and straight rebars. Layers of hexagonal steel wire mesh are laid on this skeleton and a thin (3/4-inch) layer of mortar is applied from the inside. When dry, one erects an array of shrink and temperature steel rebars at about 5 inches

above, and uses the now solid mortar layer as a form for pouring the dome.

The blast door and vents (air intake and exhaust pipes) must be attached to the structure before doing the mortar and concrete work at convenient locations. To these vents our own design blast valves are fitted. They close in both directions, where the air pressure outside is either too high (blast period) or too low (suction period following the blast). These valves are equipped with screw caps which permit one to button himself/herself up in the

shelter after the bomb has exploded. Shelter air sufficiency is about six hours and after this time the radioactive debris, rubble, dust, ashes, fallout should have fallen to the ground, the smoke, and fire gases from the fires should have dissipated and the air should be breathable again, when passed through a filter.

The interior wall is made of blocks through which one passes rebars and pours concrete.

Figure 4 shows the entrance of a blast shelter of previous, slightly different design.

Figures 5 and 6 show artist's views of the exteriors of the fallout and the blast shelters.

Detailed plans and instructions for construction can be obtained for a fee from our company. We also sell the cement admixtures and the special doors with the vents and when required the blast valves for both fallout and blast shelters.

We also have 12-VDC electrical ventilator turbines and an electrical pedal generator to recharge the battery.

We request that the buyer signs a contract exonerating us from any responsibility for any events occurring during the construction and use of this shelter.

And now it is up to you, we wish you luck and pleasure with your project.



Figure 2. Typical shelter door.

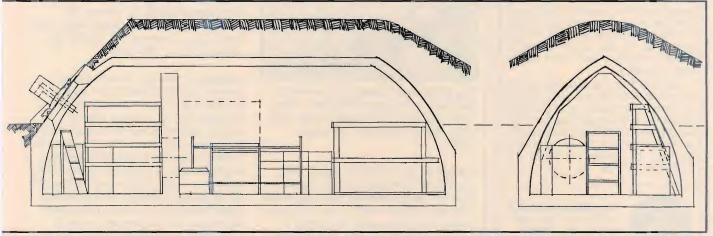


Figure 3. Blast shelter structure.

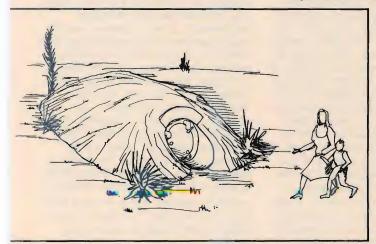


Figure 5. Artist's view of fallout shelters.

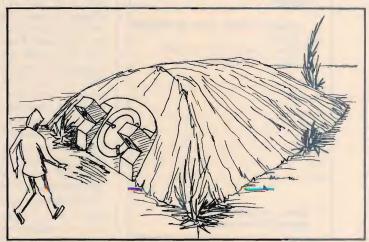
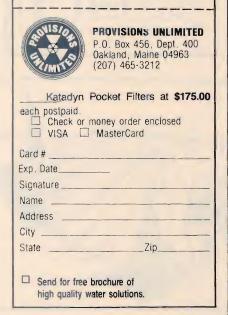


Figure 6. Artist's view of blast shelter.

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Books/Videos

(Continued from page 27)

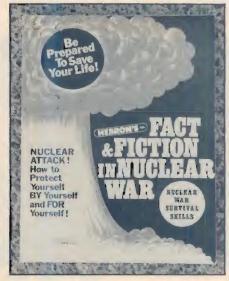
combined their expertise to produce a book designed to answer that question, focusing on the making and managing of spies in today's society. They both believe that spies are made not born; therefore, topics discussed include finding the person with the right stuff, baiting the hook, training, and keeping the spy contented. The making of a spy is a complex and technical process, and as such, the authors handle the subject seriously. Their bottom line is once an individual becomes a spy, they are signed on for life and their entire existence will never be the same.



The Mushroom Manual, by Lorentz C. Pearson; Naturegraph Publishers, Dept. ASG, PO Box 1075, Happy Camp, California 96039; softcover, 224 pages, \$8.95.

Remember the forbidden apple? Well mushroom hunting can evoke the same fear. For such a delicacy, knowing which ones are safe and which one's are deadly could create the anxiety of whether to partake or not to partake. But it doesn't have to be this way. In The Mushroom Manual. Lorentz emphasizes safety first, and then illustrates the "Fatal Five" and the "Foolproof Four." He details descriptions of over 300 species, with botanical symbols for identification and edibility of each. In fact, choice recipes are included for those who enjoy this delicious fungus, and those venturing into the pleasures of mushroom hunting. As a great family activity, the book will assist in pointing out which are safe and which to avoid. While the author's best estimate of the mushroom population consists of at least 7,000 species in North America and 15,000 (perhaps twice that many), worldwide, it does not promise to know them all nor to describe each one. Instead, the book includes the common western species, in addition to the broadly

distributed cosmopolitian species found in the east. Following a safety guideline, the author emphasizes learning a few foolproof species well and then gradually expand from there. The book is an excellent source for those seeking the tasteful enjoyment of the mushroom world.



Fact & Fiction in Nuclear War: Nuclear War Survival Skills, by Cresson H. Kearny; Hebron's Inc., Dept. ASG, 1230 Berry Lane, Flossmoor, IL 60422; 225 pages, softcover; \$10 ppd.

Designed to assist in the survival of groups and individuals in the event of a nuclear war, Kearny outlines the skills and practical applications that are needed. Believing that the United States government has done little to prepare its citizens to survive a nuclear catastrophe or attack, Fact & Fiction in Nuclear War addresses a wide range of topics that will aid in life-continuance; such as psychological preparation, shelters (extensively covered as it is the greatest concern), evacuation, improvised clothing and protective items, providing your own medical care, and meeting food and water requirements. Kearny possesses over 15 years experience of unparalleled practical field work on basic survival problems, and has worked under Edward Teller on the United States Atomic Energy Commission. While this book has been recently updated, this version, the original, still contains comprehensive and invaluable information. Edward Teller writes that this book, "takes a long overdue step in educating the American people. It does not suggest that survival is easy. It does not prove that national survival is possible. But it can save lives and it will stimulate thought and action which will be crucial in our two main purposes: to preserve freedom and to avoid war."

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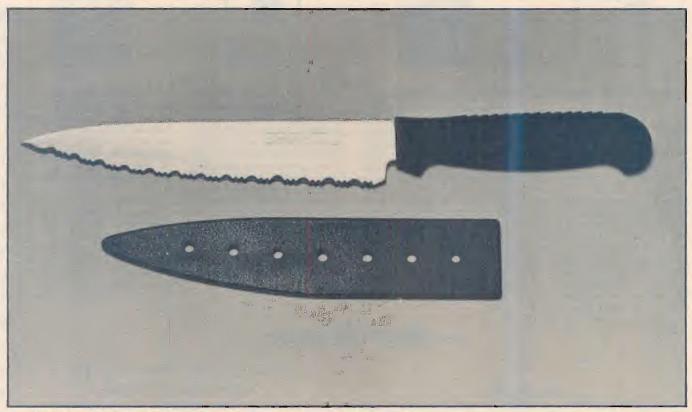
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Spyderco Model 1104

A French-style kitchen utility knife with Spyderco's version of the serrated edge . . .



The "Kitchen Rambo" is 61/2 inches of highly efficient cutting power.

By Steven D. Dick

OST readers of American Survival Guide are probably familiar with Spyderco's unique serrated "Clipit" lockback folding knives. Not only do these folders offer rapid one-hand opening, their two-step serrated edges have cutting power in tough fibrous materials that's hard to believe till you have tried it.

As folding knife prices go, Spyderco's Clipits are fairly spendy though most who have used them will agree it's money well spent.

Still, there is an answer for those looking for a less expensive utility knife with the same cutting power as the original Clipits. Recently Sal Glesser, president of Spyderco, asked me to test what he refers to as his "kitchen Rambo," the Model 1104 6 1/2-inch utility knife.

Basically this is french-style kitchen utility knife with Spyderco's version of the serrated edge combined with a light plastic sheath. The thin 1/16-inch blade is made

of MBS-26 high carbon stainless steel for Spyderco by Masahiro of Seki Japan. Handles are molded of soft Sermolan, a rubber-like plastic that gives a very secure non-slip grip even when wet. Total weight for knife and scabbard, around 2 1/2 ounces! Suggest retail, \$16.95 or \$19.90 with the sheath.

The first stop for Spyderco's utility was in our kitchen where the knife quickly made a big hit with my wife. When I compared the Model 1104 to straight-edge kitchen knives of the same length and blade thickness I found it was pretty much an even match if the straight edge was kept extremely keen.

The primary advantage of the Spyderco knife was that its serrations go on cutting long after a straight edge loses the degree of keenness required to match it. In general the Spyderco utility worked best when slicing materials that brought the whole length of the blade into play. While it was

adequate on raw meat, I found I still prefer a smooth keen straight edge for this job. The Spyderco was at its best when slicing fibrous raw vegetables, bread, or cooked meat. Considering how often the average kitchen knife is sharpened I'm sure the Spyderco Model 1104 would prove superior to most conventional kitchen knives in the long run.

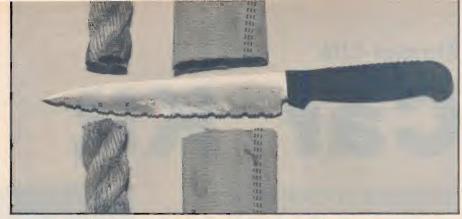
Having once tested the Spyderco Mariner for a canoeing magazine, I had a pretty good idea of what to expect from the two-step serrations of the Model 1104 on rope. If you have ever tried to cut large-diameter manila rope you know how tough this natural fiber can be. Some knives that would appear to be sharp glide over the surface of manila without leaving much more than a scratch.

On the other hand, the Spyderco utility required only a little over half the blade's cutting edge to part a section of 1-inch diameter rope. If anything I think this thin

blade slices through rope easier than the serrated Clipit folders. I was told by a Spyderco rep that the U.S. Coast Guard has been buying the model 1104 for use as an emergency line cutter around their vessels. Anyone working around lines on a sailboat or kayak might likewise find this to be a very useful knife to have secured in a strategic location on their craft.

Along with the manila rope I also tested the knife by cutting up a section of 2-inch forestry firehose. This heavy duty hose is made of woven linen with a rubber liner and like the rope, it can be a very tough cutting job for a knife. As I found in the kitchen, it's a fairly even contest between a sharp straight edge and the serrated Spyderco but the straight edge quickly falls out of the running as it loses its original keenness. For those who wonder why I'm cutting up forestry fire hose in the first place, it goes back to my years as a professional forester. After any big forest fire we always had large amounts of damaged hose that was too valuable to throw away. Whenever possible the damaged sections were cut out and the coupling remounted on the remainder. After the first few sections it often got extremely frustrating trying to force a dull knife through the tough, dirty linen.

At first I thought the plastic sheath with the utility was simply one of the disposable shipping covers found on many profes-



Anyone working with heavy rope or fire hose will appreciate how easily the Model 1104 handles these tough

sional grade food processing knives. From conversations with Spyderco I found the sheath was actually intended to be a light, durable field cover for the knife so I gave it a second chance

Its first serious test was to be tossed into a Duluth pack with the rest of my cooking gear on a canoe camping trip. After the sheath survived banging around the Duluth on a couple of float trips I tucked it into my frame backpack for an extended hike in one of Washington's wilderness areas. The knife proved to be a very handy tool to have around the camp kitchen and even the most weight conscious backpacker ought to be able to stand 2 1/2 ounces! I did have one small problem with the present scabbard in that it lacks a belt loop or other means to carry the knife on you. If you are carrying the knife in a pack this isn't a problem but I can think of occasions when it would be more convenient to carry it on a belt.

While the serrations do maintain cutting efficiency much longer than most straight edges, like any other blade they work better if touched up periodically. The best tool I found for this task is Spyderco's own Tri-Angle ceramic cross stick and it works equally well to touch up straight edges.

For more information on the Spyderco Model 1104 Utility, the Tri-Angle sharpener, and Spyderco's other unique products contact Spyderco Inc., Dept. ASG, P.O. Box 800, Golden CO 80402-0800; phone: (303) 279-8383.



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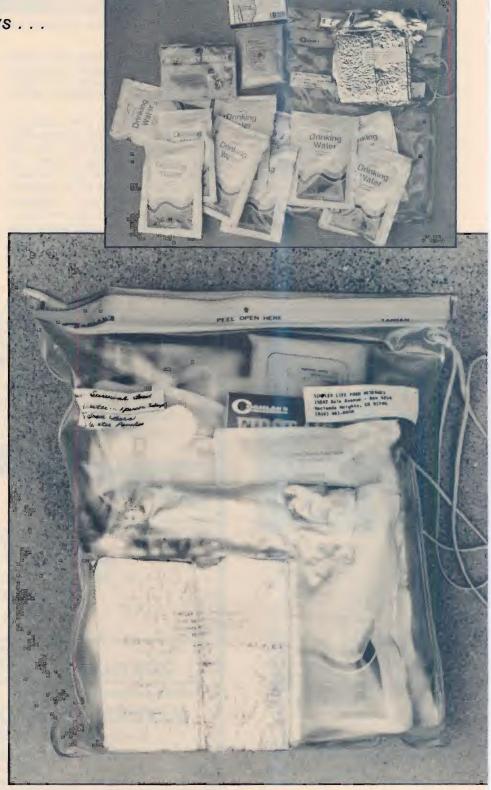
Staff Report

PEOPLE store food for different reasons. Some do it in preparation of a worldwide food shortage, while others may store just enough to survive for a short period after a hurricane strikes.

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While Simpler Life recommends storing enough food to last a year, they also offer packages that could be taken on such activities as a hike or boating trip. Being prepared for the possibility of getting lost while on foot or at sea is wise and easy. Shown here is a Simpler Life food reserve package called The Car Kit, designed for one person for three days. It is a basic survival food kit containing six food bars, 12 water pouches, a first aid kit and emergency blanket. This outfit sells for \$19.95 complete, or \$14.95 without the first aid kit and space blanket, plus tax where applicable and U.P.S. shipping costs.

Simpler Life Food Reserves food comes from Arrowhead Mills, which has been a leading producer of nutritional food products for over 20 years. Their Emergency Provisions program specializes in custom water and food plans for business, industry, utilities, schools, government agencies, families and relief agencies. Their order list is extensive. Among the offerings are a 10-person disaster kit, water storage containers and purifiers, home kit and a 15-person medical kit. For more information on their inventory and an order form, write or call: Simpler Life Food Reserves, Dept. ASG, 15842 Gale Avenue, Box 5214, Hacienda Heights, CA 91745; (818) 961-8858.



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Staff Report

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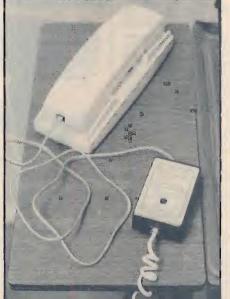
To install you remove the telephone modular cord from the wall receptacle and plug it directly into the female jack of the TPP028D. On the opposite side of the TPP028D is a cord similar to the telephone cord and this is plugged into the telephone wall receptacle. That's it, You're done.

You can install one of these devices on each telephone line you wisk to check for security. The small red light on the TPP028D lights up each time you use the phone. If someone is listening on the line with another telephone in another room or is tapping your phone, the red light goes off, alerting you. Only one of the telephones connected to the common telephone line can access the line at a time. Incoming/outgoing calls can be transferred repeatedly by first going off-hook with the desired telephone and then placing the telephone back on-hook. The system in this operation will not disconnect the line because the Privacy Protector is equipped with a fast-switching circuit.

Installed in service with a computer modem:

If the modem is not occupied or if there is no modem, only one of the telephones connected to the common telephone line can access the line. No one else hears your conversation by picking up one of the extensions as these are temporarily disabled.





ABOVE — The Bug Box, upper left, and the Tele-Monitor 2000, center, can be used with your telephone to detect eavesdropping and monitor your premises from long distance.

LEFT — The Bug Box or TPP028D connects to your telephone line to alert you to a telephone tap or eavesdropping on an extension

BELOW — Here the Tele-Monitor 2000 is hooked up for use with a wall outlet telephone



If the computer modem is occupied for DATA transfer, none of the telphones connected to the common telephone line can interrupt to the line. You may hear some sound of modem transmission but you cannot interrupt to the line because of the one-way transfer in the TPP at this moment. This prevents interruption of the DATA transmission. This applies to all computer telephone line transmission, including telex systems, electronic mailbox systems and others such as Western Union, Sprint and W.U. Easylink II.

The TPP is the only device of its kind that not only notifies you of unauthorized intrusion onto your line, but also prevents eavesdropping from same-line extensions and dedicates the line for telex and or computer modem usage.

The "Secret Ear" or Tele-Monitor 2000 lets you discreetly listen in on unusual activities on any premises via the telephone.

It's a sophisticated audio-monitoring instrument using logic chip technology. Once it's plugged in, you can use any Touch-Tone phone to monitor your premises.

The Tele-Monitor is equipped with a modular telephone plug. You can plug it directly into a telephone wall jack or use a modular duplex jack and plug both your phone and the Tele-Monitor into the wall jack. You can connect up to four Tele-Monitors to one telephone line (with different extensions) for room-to-room monitoring.

The Tele-Monitor 2000 has two operational modes which are selected by the setting of the recessed sliding mode switch on the face of the device.

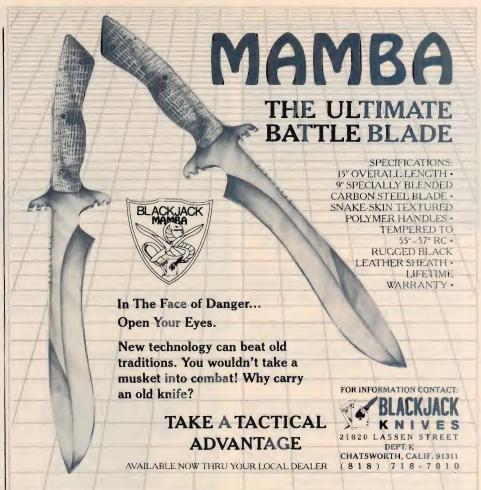
In mode A, when the monitor is not in use, normal telephone incoming and outgoing calls are not affected. If you are using the Tele-Monitor when someone is calling in or out, the device is simply shut off and you use it again when the line is not being used.

In mode B, which is intended for "after hours" use when no calls in or out on the line are expected, the phone line cannot accept normal incoming calls.

The selector knob is set on any number between 1 and 4 and that number selected tells the monitor to respond to the tone of the corresponding push button of any Touch-Tone phone.

Using your telephone line and phone, you can listen in to any activity in the immediate area of the Tele-Monitored phone for as long as you wish from any distance away, just as if you had a secret microphone installed there in the room you are monitoring—In fact you do!

The Telephone Privacy & Computer Modem Protector is \$48 postpaid and \$30 postpaid for each additional unit ordered, and the Tele-Monitor 2000 is \$169 postpaid and \$150 for each additional unit ordered. Contact The Dutchman, Dept. ASG, P.O. Box 12548, Overland Park, KS 66212; phone (800) 821-5157. ●





NEWEST CRANK OPERATED RAPID FIRE CAPABILITY SINCE

Mini-AT Pistol

(Continued from page 20)



Safety is actuated by a flick of the trigger finger.

failures to fire were experienced with nearly 200 rounds of ammo used in testing. These were quickly cleared and we continued shooting.

At the open shooting area we set up targets 25 yards away and without using a rest, found we had pretty decent accuracy with the Mini-AT. Even with rapid fire we were able to place most of our shots on the targets.

Later, at the private gun club, we fitted the pistol with a Burris 3X pistol scope and bench-rest tested it 50 yards from the targets.

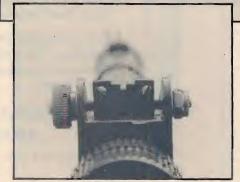
Feather sells a Weaver-type scope mount for the Mini and the pistol comes drilled and tapped for the mount.

We didn't complete zeroing with the scope during our test shooting but we did find very good accuracy at 50 yards with bench resting using our Hoppe's Expert's Bench Rest.

The Mini-AT's trigger is close to the pistol grip and there isn't much distance in the trigger pull. The gun fires with the trigger almost recessed in the pistol grip and this can take some getting used to, especially if you have large fingers. A large spring drives the hammer through the bolt to strike the firing pin when the trigger is pulled.

I found that I did much better with fairly quick-succession shots rather than slow, carefully aimed single shots. Using this technique, which, by the way, has







Rear sight is an adjustable square notch. Front sight post has protective wings

worked well for me with other guns, I was able to shoot a 1-inch, 5-shot group at 50 years with the scope. As soon as I had the cross hairs of the scope on the target I pulled the trigger, then repeated the process four times with about 1 to 2 seconds between shots.

The Mini-AT is a solid, dependable firearm and we think it would be quite useful for hunting, plinking or even self defense. See your gun dealer or contact Feather Industries, Dept. ASG, 2300 Central Ave. #K, Boulder, CO 80301; phone (303) 442-7021. ●

Mini-AT Pistol: Tech Specs

Caliber	Blowback Semiautomatic
Weight	2 pounds 20 rounds 11 inches
Front sight	





Accessories for the Mini-AT include extra 20-round magazines, adjustable sling, scope mount and padded carrying case.

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mm), circumference 11/2". Tensile strength: 4,500 lb. NSN4020-00-931-8793. Twisted nylon. (2)Olive Drab, (3)Black. Hank: 120' [6 lb 13 oz]. Reel: 600' [40 lb] critical support usage. Specs: Diameter 7/16" (11 Genuine issue climbing, extraction and rappelling rope is made to Mil-spec Mil-R-1688D for

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Staff Report



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With a little water, butter and salt, one can enjoy the flavors of air-dried carrots. See if you can tell the difference between these and the frozen carrots you have in your freezer.

Air-dried carrots are also available. There are 11 disks per can, which is equivalent to 50 half-cup servings. Just soak the disks for a brief time, add butter and salt (if that is to your liking) and discover that they taste remarkably similar to fresh or frozen carrots. They are only \$10.95 per can plus \$2 S&H.

To order or for more information, write Nitro-Pak Storage Foods, Dept. ASG, 11018 E. Rosecrans Ave., Suite #300, Norwalk, CA 90650. Or call (213) 929-4705.

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National Security Agency

The nation's largest and most secret intelligence agency . . .

By Michael Pietrantoni

N 1973, 2,477,881 telephone calls were made between New York City, Miami, and 6 South American cities. Almost all of these calls were friends calling friends, children calling home, businessmen making deals, etc. A few of them, however, were between drug dealers in the United States and their suppliers in South America.

In an attempt to crack the drug ring, the U.S. government took the unprecedented step of monitoring every one of those phone calls. The logistics involved in the monitoring of over 6,000 calls a day are staggering. Humans alone could not do the job. Instead, computers programmed to respond to key words and phrases were used. When these key words were spoken the computer would alert the agent in charge, and another computer would begin to trace the calls and record them for later use.

The monitoring operation was not carried out by the FBI or the CIA. Neither of these agencies have the massive technical capabilities that are required for such a mission. Instead the job was assigned to the most secret, and incidentally the largest of all U.S. intelligence agencies, the National Security Agency (NSA).

The NSA was created in November 1952 by President Truman. Bypassing the usual method of congressional authorization for a new agency, President Truman instead used an executive order as the basis for creation of the NSA. This executive order outlined the activities and operations of the new agency. The order was then and remains today one of the most highly classified documents in the U.S. government.

By the early 1950s it had become clear that while the shooting war in Europe was over, a new "cold war" had taken its place. The need for accurate and timely intelligence was growing larger each day. At the same time came the realization that signals intelligence (sigint) had become the best source for obtaining needed information. Not entirely coincidental with this realization was the ongoing development of the computer. These devices, primitive as they were, gave the intelligence community the ability to store, analyze, and retrieve the enormous amounts of data generated by sigint.

A study commission appointed by President Truman had begun analyzing the best ways of obtaining and using sigint information. At that time sigint responsibility was divided among four separate defense



- 1 NSA Headquarters, Ft. Meade,
- NSA Listening post, China established after loss of NSA Iranian facilities.
- 3 Hawaii NSA underground base.
- 4 Frankfurt, W. Ger. NSA Europe headquarters
- 5 Turkey NSA and military listening posts.
- Hokkaido, Japan listening post built by NSA, run by Japan. Most likely base to have recorded Soviet radio communications during KAL-007 incident.
- 7 Yorkshire, England Joint U.S. British listening post.
- 8 Gulf of Fonseca U.S. ships with elint equipment currently on station.
- Yakima, Wash. NSA facility within range of COMSAT earth station.
- Sugar Grove, W. VA. National quiet zone. Large NSA facility.
- 11 Pine Gap, Australia Major NSA facility. Earth station for elint satellite data.

department agencies. The commission, seeking to reduce duplication of effort, and more importantly to centralize the sigint function, recommended that one new agency be given overall responsibility for all sigint efforts. Thus on election day 1952 was born the NSA.

The NSA is the nation's largest intelligence agency. Estimates of its manpower range from 40,000 to 60,000 employees when military personnel assigned to the agency are included. According to a 1976 House Government Operations Committee report, NSA's budget could be as much as \$15 billion per year. Besides personnel costs, that \$15 billion is used by NSA to operate more than 2,000 listening posts scattered throughout the world, run an immense network of "spy" satellites, and in the operation of a headquarters "city" comprising almost 20 buildings and the world's largest computer facility. NSA has in fact so many computers that the floor space they take up can literally be measured in acres.

The NSA headquarters complex is located at Fort Meade, Maryland, on a 1,000-acre site. The complex is partly visible to drivers on the Baltimore-Washington Expressway. It appears to be nothing more than one of the many government office towers in the area. It is not until you approach the complex that you realize this is not an average government facility. The complex is surrounded

by three rows of high fences, the middle row of which is electrified. Television cameras monitor all sides of the complex. Along the outermost fence are numerous signs warning that photographs are not to be taken.

Within the complex, where thousands of employees work each day, are the makings of a completely self-sufficient community. Generators with capacity in excess of 100,000 Kv provide power to the complex. A hospital facility and staff, a library, a television station, a post office, a college, its own police force, shops and stores, all combine to give the NSA employees a mini-city of their own.

As in any city, waste disposal has become a problem. Since the NSA classifies up to 100 million documents each year, the amount of classified material that must be disposed of is enormous. Each day the NSA must dispose of approximately 40 tons of very highly classified waste material including tapes, documents, and computer printouts. The agency once tried to build their own classified waste incinerator but was not successful because the incinerator could not handle the load. The problem of classified waste disposal threatens to worsen as systems become more sophisticated and generate ever more data.

The NSA role in the American intelligence community is two-fold, offensive and defensive. Offensively the role of the agency is to actively monitor and collect data from worldwide communications networks. Not only are networks such as telephone and teletype systems monitored, but also satellite relay links, military and diplomatic communications nets and computer data transmissions,

All can be, and are, monitored by NSA for vital fragments of intelligence. Since almost all military and diplomatic communications are encoded, the NSA has become the code-breaking agency of the United States government. With its massive computer network and the very best theoretical mathematicians in its employ, the NSA has the ability to break code systems of the highest complexity.

Traffic analysis is another of the NSA offensive roles. Subtle changes in routine message patterns, sometimes so small as to be detectable only with the use of computers, can be indicative of a very major policy or military shift within a target country. For example, when a change in the routine message traffic between Cuba and the Soviet Union was detected by an NSA intelligence ship off the coast of Cuba in 1962, the CIA was ordered to overfly



USS Liberty. Until 1970 spy ships like the Liberty and USS Pueblo were used by NSA to intercept communications of target countries.

Cuba to look for any changes. The U2 photos later showed that the Soviet Union was preparing to install nuclear missiles in Cuba.

Other NSA offensive roles include the monitoring of radar and other electromagnetic emissions during Soviet space flights, as well as the interception of data and voice transmission during such flights. It was this capability of the NSA which was damaged when the listening posts in Iran were closed after the Khomeini revolution. This capacity has been somewhat restored by a new U.S. listening post, established by agreement, inside the People's Republic Of China.

Some sigint operations are designed to provoke a response and to collect the data resulting from that response. In the cold war game, both sides will occasionally allow ships or planes to come near prohibited areas or borders in order to monitor the response of the defensive radars of their adversaries. Indeed this type of mission could explain the Soviet paranoid response to, and their subsequent destruction of KAL flight 007.

Over the past few years the defensive role of the NSA has been growing. This is due largely to the increasing Soviet ability to monitor data and other transmissions within the United States.

Defensively, the role of the NSA has always been to assure the integrity of vital U.S. communications links, in particular those required by the National Command Authority (NCA). This role has now been expanded to include commercial and private businesses doing classified work for the government. Also included are banks and financial institutions which handle sensitive though non-classified material.

NSA itself, as the terminus for highly sensitive information, is subject to electronic snooping. One of NSA's most recent attempts to guard against high-tech bugging of its headquarters, involves the addition of copper "skins" to a number of new buildings under construction at Ft. Meade. The goal may be to prevent detection of conversations from a distance using a device that can pick up vibrations in building materials caused by speech. Another possibility is that the copper will create an electromagnetic barrier against advanced satellite and ground-based snooping devices.

COMSEC—NSA is also responsible through its Communications Security Office (COMSEC) for the development and standardization of all crypto systems used by the U.S. government. These include specialized systems for the Army, Navy, State Dept., etc. The command codes used by the President to order a nuclear strike are also most likely produced by NSA. These codes are carried in the "football," an attache case carried by a military officer who is never more than a few feet from the President.

Systems designed by NSA codemakers are often subject to analysis by NSA codebreakers in an attempt to design the most resistant possible code system for a given user. Such systems include data encryption for computers and electronic devices which transmit information. An example of data encryption has recently been making headlines. The U.S. has accused the Soviet Union of violating arms control treaties by encrypting data from missile test flightsan action specifically banned by the terms of the agreements. Such data, un-encoded. are vital in assuring that both sides are adhering to the terms of the agreements on the limits placed on nuclear missiles.

As mentioned before, NSA operates as many as 2,000 intercept stations throughout the world. These stations range in size from large installations with permanent buildings and satellite receivers, to single aircraft crammed with computers and monitoring equipment.

Up until 1970 the NSA also used ships as floating intelligence intercept stations. Perhaps the most well known of these spy ships were the Liberty and the Pueblo. Both of these ships suffered attacks within

a year of each other. The Liberty was attacked by the Israeli's during the 1967 war, in a bizarre incident which cost 34 American lives. The Pueblo was seized and her crew held hostage by the North Koreans in early 1968. One American died in the attack. These two incidents prompted the NSA to end its use of special intelligence-monitoring ships. However, new warships of the U.S. Navy are now designed and built with electronic eavesdropping gear as an integral part of the vessel. The Navy ships which are currently on patrol off Central America utilize the equipment to monitor both the Communist guerillas in El Salvador and their Nicaraguan neighbors.

Perhaps the most secret part of the super secretive NSA is the network of "ferret" satellites used by the agency.

Beginning in the early 1960s, the use of ferret satellites was initially intended to supplement the sigint gathered by planes and ships. The satellites have long since passed the point of being a supplementary intelligence source, and are now among the prime methods of gathering sigint. The



The Soviets continue their spy ship program. This electronics intelligence ship is of the BAL'ZAM class, one of the newest. These ships can be found off U.S. coasts and where U.S. military exercises take place.

satellites are unencumbered by the geography of the areas into which they peer.

They can monitor electromagnetic emissions from deep within target countries, something that ships and planes had been unable to do. In combination with the photo satellites of another secret intelligence agency, the National Reconnaissance Office (NRO), there is no place on earth which can not be looked at and listened to in great detail.

The NRO by the way, is a "black" organization, as was the NSA up until just a few years ago. No one in the United States government will even admit the existence of the NRO. Nonetheless it does exist. Its job is photo reconnaissance using very sophisticated "eye in the sky" satellites. It was the NRO which recently spotted crates of the type used to carry Mig-25 fighters, being loaded aboard a Bulgarian ship which was headed to Nicaragua. Because of the publicity and U.S. threats, the crates were never unloaded in Nicaragua.

The NSA sigint satellites themselves

National Security Agency

have become so sophisticated that they now carry on-board computerized memories of all known locations in target countries which emit electromagnetic radiation. This memory allows the satellite to compare recently captured signals with those stored in its memory. Should the patterns change, or should a new signal be detected, the computer in the satellite will notify the ground controllers of its findings. The ground controllers can then guide the satellite to the best position to focus in and collect data from the new source.

NSA Vs. Soviet Sigint—While the U.S. undoubtedly leads the Soviet Union in high technology and computer science, this does not mean that the Soviet sigint efforts can be ignored.

In the early 1970s the U.S. government became aware of a massive Soviet effort to eavesdrop on telephone conversations between New York City, Washington, D.C., and other major U.S. cities. The eavesdropping was conducted from within Soviet embassies which it was noted, invariably possess sophisticated antennas and communications equipment. The equipment monitors microwave channels through which almost all long distance telephone calls in the U.S. are routed.

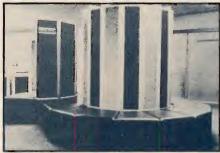
To combat these interceptions many telephone circuits to which the Soviets were listening were re-routed through underground cables in place of microwave transmissions. At the same time, President Carter authorized the NSA to begin research efforts aimed at producing scrambler phones for general use.

As a result of this program the federal government, through the NSA, has recently authorized three of the nation's largest communications companies, AT&T, RCA, and Motorola, to begin production of the new secure telephone units. These units will digitally scramble voice and data signals, rendering any interception of those signals useless. The scrambling will be based on randomized code settings which will be sent directly to the phones themselves from one of two new "key management centers." One center will handle the phones of private businesses such as banks and brokerage firms while the other will handle the phones of government agencies and defense contractors. This system insures that the phones themselves, even if lost or stolen, will not present a security risk, as they do not initiate the random code settings. Nonetheless, according to NSA sources, the phones will be made tamper resistant.

NSA hopes that by the end of the decade 500,000 of these units will be in use in government and defense contractor offices, as well as 1 million more in use in private business. The goal according to Walter Deeley, the NSA deputy director

for communications security, is to "button up U.S. voice communications by the end of the decade."

Telephone and voice communications interception are not the only threats the NSA has to deal with. Just recently the Soviet Union successfully launched the largest electronics intelligence (elint) satellite in the entire history of their space program: Cosmos 1603. Launched into an orbit which takes it over the U.S. many times a day, Cosmos 1603 is able to monitor U.S. government, military, and civilian radio nets with much higher sensitivity than earlier Soviet elint satellites. The Soviets currently launch about four elint satellites per year. Many of them are used to keep tabs on the locations of U.S. surface warships by listening in on their routine radio traffic and pinpointing the source.



CRAY-1 Supercomputer. NSA has always been a major but silent force in the U.S. computer industry. The first CRAY-1 built went to NSA in 1976.

Unlike the U.S., the Soviet Union continues to maintain a fleet of sigint ships which it deploys worldwide. These ships can be identified by the large antenna arrays they carry. These Soviet sigint ships can always be found off both U.S. coasts and in the areas of any U.S. military exercises.

Perhaps one of NSA's biggest headaches is the soon-to-be-completed new Soviet embassy building in Washington, D.C. Called by many in the intelligence field the biggest intelligence giveaway in history, the new embassy stands on the highest ground in the area. It has direct line of site to the White House, the Pentagon, the Capitol, and CIA headquarters. Further, the Presidential helicopter, located at Andrews AFB, is also clearly visible each time it takes off or lands. The new Soviet embassy is thus in the ideal location to intercept major amounts of classified sigint data.

The Senate intelligence committee was so worried about high-tech eavesdropping from the new embassy that they have moved out of the Senate auditorium in the Capitol building, to secure quarters in the Hart Building. The new location in the Hart Building is guarded and sound proofed. There is also an electronic "white noise" generator within the new chamber that prevents electronic bugs from picking up anything but static.

It is of interest to note that the new U.S. embassy in Moscow is located at the lowest point in the city and has no direct line of site to any major Soviet government building or military installation.

The Future—From its unhearalded beginning in 1952, the NSA has always been in the forefront of computer research. A recent announcement, made at the first ever press conference held by NSA, indicates that the agency will continue to be in the lead in computer development.

A new 100,000-square-foot "supercomputer research center" will soon be built in Maryland under the auspices of the NSA. Scheduled to cost about \$200 million, the new center will be staffed by the top 10 computer scientists in the country.

The agency hopes the new research center will be able to lengthen the current U.S. technological lead in computer sciences. Some of the projects which the new center will work on sound like science fiction. For instance, a real-time language translating computer, one which will translate spoken words, such as those intercepted by a telephone tap, from one language to another almost instantly. Another project is a computer network which will tie together the sigint computers of U.S. allies around the world. One of the most ambitious projects will be the development of a fifth generation, parallel processing super computer, which will be capable of up to a quadrillion (1 with 15 zeros) operations per second.

NSA has also eagerly awaited the advent of the space shuttle. The shuttle will allow NSA to launch sigint satellites with antennas which when unfurled in space, will be hundreds of meters across. Until the shuttle, one of the limiting factors of sigint satellites was their antenna size. The larger the antenna the weaker the signals it is able to pick up. With the super large antennas made possible by the shuttle cargo capacity, U.S. sigint satellites will theoretically be able to pick up signals from transmitters as small as CB sets.

NSA is truly an agency of "silent warriors." Their job is to listen to the chatter of the world in a search for information or patterns which could pose a threat to this country or its allies. Many of today's most valuable secrets are locked in the layers of silicon which make up the microchip grains of modern computers. NSA is using this technology and others even more advanced in its never ending search for information.

In the "war" in which this country is now engaged NSA spills no blood. The real weapon of this war is information. In seeking to provide timely and accurate information NSA performs a job every bit as important as the Army or the Navy. A job which can only grow more important as technology continues its rapid advance.



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Avoiding/Surviving Bear Attacks

(Continued from page 25)

important to resist night attacks as both species may be regarding you as prey and if you play dead too soon, you may be eaten.

In a daytime encounter with a Grizzly Bear, the bear may stand up and make a series of head movements in order to get a better sense of what you are. This activity may be accompanied by huffing and gurgling, snorts and woofing noises, and the clacking of teeth. False charges may follow, when the bear comes closer but pulls up short of actual contact. The bear may also run circles downwind to aid their sensing of what you are. An attack may be signalled by the bear dropping on all fours, raising the hackles around the neck, flattening the ears and growling. In this situation, "play dead" as the bear actually attacks you.

Black Bear behavior is slightly different. Charges may be preceded by ground swatting, paw motions and loud blowing noises. In these situations, "play dead" as the bear actually attacks you.

If you are attacked, bitten, mauled, or cuffed to the ground, play dead and passively resist by assuming one of the following positions:

- 1. Leaving on your pack to protect your back, lie face down, place your hands around your neck with interlocking fingers and use your arms to protect your face.
- 2. Leave your pack on, assume a fetal position by curling up on one side, head buried in your knees and arms locked around your legs.

Remain in your chosen position and keep all sounds and movements to an absolute minimum. Try to "freeze" and maintain silence until the bear leaves. Your life may depend on it. After a bear leaves the scene, which is usually after 2 to 10 minutes, you might consider checking to see if the bear has really moved away before making any sudden movement to escape. An active person in a group can often draw the attack away after a sudden encounter. If one of the party is being severely mauled, other members may be able to draw the bear away by moving and making noise.

Precautions to take when traveling in bear country:

There are a number of simple precautions to take when you are hiking in bear country. Always check in with the park authorities or land managers to obtain the most recent information regarding bear activity in the area you intend to visit. Also, report any sign of bear activity to the appropriate authorities on your return. When you are in the field, obey all official posted signs closing or restricting areas due to problem or nuisance bear activity.

Stay alert for signs of recent bear activity and in particular, stay away from bears' food sources in season. Travel in groups of six or more since bears are reluctant to attack large groups. Always make some noise as you travel, especially in dense bush and when the wind is against you. The direction of the wind will determine noise and scent travel. The sound of running water may also obscure the sounds of your approach to a browsing bear. On the other hand, perfumes or personal body odors present during menstrual periods may attract bears. Dogs should never approach bears at close range. Better yet, leave dogs at home.

Bear Precautions—camp site selection:

- 1. When planning a camping trip, always check with park wardens or forest rangers on recent bear activity in the area you intend to visit. Take heed of all warning notices posted regarding bear danger.
- 2. Remember the following points when selecting a camp site:
- (a) Avoid natural lines of travel: game trails, backpacking trails, beaches, ridges, water courses and dense bush.
 - (b) Avoid garbage-infested sites.
 - (c) Avoid bear-scavenging sites.
- (d) Avoid obvious food sources for bears. These include berry patches, animal carcasses and fish viscera.
- (e) Avoid bear traps—these are indicative of problem garbage bears in the area.
- 3. Select a tent site near a climbable tree. You should be able to climb 30 feet up the tree to be safe from a Grizzly. Remember, Black Bears can climb trees.

Bear precautions—camp site manage-

- 1. Ensure you position your food cache 100 meters from your cooking site and 100 meters downwind of your tent site.
- 2. Use a tent. It is safer than sleeping out in the open. Keep a flashlight handy.
- 3. Avoid cooking highly odorous foods and cook 100 meters downwind of tent.
- 4. Cook only sufficient food for your requirement to avoid waste. Pack out all uneaten food or burn it completely. Burn and beat down any cans and remove plastic and aluminum foil. If you pack it in, pack it out. Do not bury garbage.
- 5. To reduce odor travel, all food, cooking utensils, garbage, toothpaste and other smelly items (and perhaps the clothes you cooked in) should be sealed in a plastic bag inside your pack and placed high above the ground on a rope.

Bear precautions—bear rope food cache construction:

It is very important to store food out of the reach of bears and rodents by using a bear rope to construct a safe food cache. Equipment Required: 1 meter of 5 to 7 mm rope; 30 meters of 5 to 7 mm rope; 2 carabiners; 1 pulley. Knots Required: 1. Round turn and two half hitches; 2. Reef knot; 3. Overhand knot on the bight.

Construction:

1. Select two easily climbed trees, about 10 meters apart and 100 meters downwind

of your camp site.

- 2. Take one end of the 30-meter rope and a carabiner and climb one tree to a height of seven meters. Tie off this end of the rope using a round turn and two half hitches. The rope should be tied off above a stout branch so that it does not slip down the trunk.
- 3. Measure off five meters of rope from the knot around the trunk and tie an overhand knot on the bight and clip the carabiner into the knot.
- 4. A second person can climb the other tree carrying the 1- meter length of rope, a carabiner and a pulley, plus the other end of the rope. The short rope is tied around the trunk above a stout branch seven meters above the ground using a reef knot. The carabiner holding the pulley is clipped into the loop of rope around the trunk.
- 5. The bear rope is threaded through the pulley and brought down to the bottom of the tree ready for hoisting.
- 6. The food bag is attached by a carabiner to the overhand knot on the bight and hoisted as high as possible (minimum 5 meters). The end of the hoisting rope is tied off with a round turn and two half hitches.

When you are using a backpack it is advisable to clip the waist belt around the bear rope so the sack does not hang too low. It is possible to construct simpler food caches, however, this sytem allows for a substantial weight to be stored. A more simple method is by tossing a weighted rope over an isolated branch on a tree. The branch should be approximately seven meters above the ground and the rope should be at least three or four meters out from the trunk. Do not pick a branch that is too sturdy or else wildlife may reach your food. Simply clip your food bag onto one end of the rope and haul it up. In some designated campsites, there are specially constructed food cache poles over which you can throw the bear rope and hoist your food pack. If only a small food bag is required, it is possible to throw the weighted rope ends over two trees forming an "M." Attach the food bag to the center of the rope and hoist it up by pulling on the ends of the rope.

There is no formula or rules which can be offered to completely remove the danger of encounters with bears. Wilderness users have to remember that they are the intruders into the bear's natural habitat and must accept the level of risk which is always present in the untamed wilderness environment. The Cree word for the Grizzly Bear is Mustahyah meaning "spirit." Truly the Grizzly does indeed represent the spirit of the wilderness and it would be a sad day to see him disappear forever because of competition with man.

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Terrorism:

PLO

The frustration and resentment of Palestinian refugees contributed to the formation of the Palestinian Liberation Organization . . .

By Carl H. Yaeger

This is one of a series of articles that will run occasionally on terrorist groups and organizations and their supporters. This article deals only with individuals involved in such activities and is not intended to reflect negatively on other individuals of the same ethnic/religious/national backgrounds—The editors.

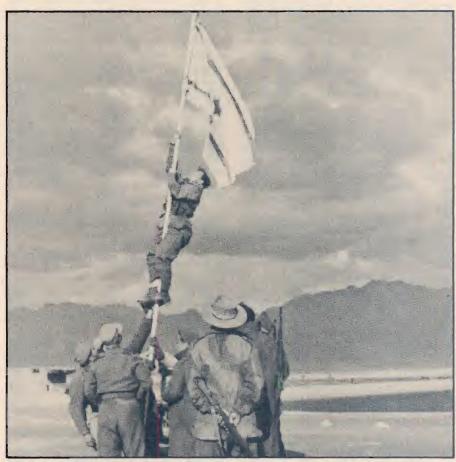
N May 14, 1948, a new nation was proclaimed in the turbulent Middle East. The blue and white flag of the Star of David signified the new, but tenuous existence of Israel. The next day, the regular armies of Egypt, Jordan, Iraq, Syria, Lebanon, and a Saudi Arabian contingent, invaded the fledgling country.

The war lasted until July, 1949, as the poorly armed and vastly outnumbered Israeli Defense Force (IDF) repulsed the Arab attack on all fronts and an armistice was agreed to.

The fighting created another "nation," not a nation in the traditional sense, but a nation in exile, a nation of the dispossessed; of those who fled Israel because of the fighting itself, or because they were told by Arab propagandists that they would be imprisoned or murdered by their new Jewish masters.

Over one million Palestinian Arabs fled their homes which were in what is now Israel. They were forced to live in dreary, United Nations refugee camps in Jordan, Syria, and Lebanon. The Arab nations refused to assimilate them into their societies as it served the purpose of these regimes to have a large, disaffected and angry population to exploit against Israel.

Prior to the creation of Israel, the Palestinian Arabs were among the wealthiest in the Arab world. Many were professional and business people; people of education, status, and substance who had to leave behind farms and fields, homes, factories, and shops. The Palestinians, in their mass flight to safe havens, left behind a vast amount of wealth and received nothing in the way of compensation for their confiscated property. In fact, in a 1958 study entitled Israel and the Palestinian Arabs, by Don Peretz, it was noted that the refugee's abandoned property was one of the greatest contributions towards making Israel an economically viable state. Peretz reported that of the 370 new Jewish settle-



Creation of the State of Israel in 1948 led to the establishment of a Palestinian state in exile (Israeli government).

ments established between 1948 and 1953, about 350 were former Palestinian Arab settlements and were still owned by absentee landlords. Nearly a third of Israel's new immigrants during this same time period (250,000) settled in urban homes and neighborhoods abandoned by the Arabs.

The frustration and resentment felt by the Arab refugees contributed to the creation of small, inefficient guerrilla groups and eventually, to the formation of the Palestinian Liberation Organization.

Egypt started the process by organizing, equipping, and sending into combat, several battalions of Palestinian "Fedaycen"—self-sacrificers, in the early 1950s, During this period of time, Palestinian students at Stuttgart University in West Germany formed Fatah (Arabic for Conquest). The guiding spirit behind the creation of Fatah was Yasir Arafat, an on-

again, off-again student who fled Jerusalem during the 1948 war and settled in the Gaza, that barren strip of land between Israel and the Egyptian Sinai. Arafat and other Fatah leaders became convinced that the Palestinians must devise their own means to recover their homelands and not rely on, or wait for Arab governments to do it for them. In a few years Fatah, and other Palestinian groups, were well established in Europe and throughout the Arab world. Soon, they were receiving military training in Algeria and Egypt, and by the early 1960s, they were conducting terrorist raids in Israel itself.

The first Palestinian National Congress was held in 1964 in the Jordanian sector of Jerusalem. It was here that the PLO was born and the strategy which would soon wreak havoc in Israel, and part of the Western world, evolved from this congress.

The official policy of non-recognition of Israel and that the Palestinian problem will never be resolved except in Palestine (Israel) and by force of arms, was proclaimed.

The PLO was intended to be an umbrella organization for the myriad of groups sprouting up, all in the name of the Palestinian resistance, but the vast majority of these groups found themselves manipulated by various Arab governments for their own ends. Indeed, some of them were the creation of various national intelligence services, and were created for the same purpose of capturing the Palestinian cause for their own national causes.

The PLO emerged as an autonomous entity in the Arab world in 1967 when Fatah guerrillas won recognition for extraordinary heroism in the Six Day War. When Arab armies were reeling under Israeli attacks and retreating so fast across the hot Sinai sands that they left their combat boots and equipment behind, Fatah guerrillas fought Israeli military units to a standstill in several encounters and, in one case, forced an Israeli battalion to retreat. Now, the credibility of Palestinian courage and fighting abilities had been firmly established. Shortly afterward, young Palestinians flocked to the PLO banner by the thousands.

The failure of the conventional strategy of the Six Day War convinced the PLO leadership that a new approach was needed. The PLO went through some reorganizational changes and developed new policies, but again, the militancy and inflexibility of the PLO ideology was evident in the Palestinian National Covenant which the Palestine National Council, the Palestinian legislative body, hammered out in 1968. The Covenant declared that "Armed struggle is the only way to liberate Palestine. Thus, it is the overall strategy, not merely a tactical phase. The liberation



For years, children of northern Israel slept in underground shelters for protection from PLO attacks (Israeli government).

of Palestine aims at the elimination of the Zionist presence. The Arab Palestinian people reject all substitutes for the total liberation of Palestine." The Covenant called for the total destruction of Israel as a political entity and the expulsion of all Jews who immigrated to Israel after 1948.

Turning To Terror-The "new approach" that PLO strategists were in the process of developing was terrorism. Not only Israelis, but anybody or any nation who supported and aided Israel, would be targets of this new form of warfare. In February, 1969, Yasir Arafat, already the head of the PLO's largest faction, Fatah, took control of the entire organization. Since then, the turn to terror has been dramatic and consistent. The PLO has perpetuated some 8,000 acts of terrorism, mostly against Israeli civilian targets, causing the deaths of over 650 Israelis and the wounding of thousands more. Other victims have included Jews abroad, innocent bystanders of many nationalities, and Arab political opponents.

Among the world's many terrorist organizations, the PLO-with Fatah at its core, is the only one that:

—Has as its declared aim the liquidation of a sovereign state and its citizens;

-Is sponsored by sovereign states, receiving financial and material assistance from Arab governments, some of which also provide it with operational bases on their territory:

-Has offices and contacts throughout the world and is at the center of regional and international terrorism. The PLO has fostered, trained, armed, and financed terrorist groups all over the world and of every political complexion—from Islamic fundamentalist to neo-Nazi.

Until 1970, the PLO was based primarily in Jordan. Their arrogance and unbridled use of power resulted in King Hussein unleashing his tough bedouin troops of the Arab Legion against them in September of that year (Black September), crushing them completely in Jordan, and chasing the bloodied and beaten remnants of the PLO into Lebanon, where it re-established itself. The Lebanese government was too weak to oppose it and looked on helplessly as the Palestinians generated instability and civil strife, and turned the southern part of that hapless nation into "Fatahland," an area of guerrilla and terrorist base camps from which it launched border raids into northern Israel.

The PLO "state within a state" in Lebanon stretched from South Beirut to the city of Tyre in the south; from the Mediterranean Sea in the west, to the Syrian border in the east. It established its own army of 15,000 men, armed with the most sophisticated of modern weapons, mostly of Soviet or East Bloc manufacture. It set up its own legal system and PLO courts, its own radio and communications network, and its own entry and exit system to the territory it controlled, completely ignoring Lebanese laws and directives from the Lebanese government.

Worst of all, it turned southern Lebanon into a training ground for international terrorism, not only for those terrorist groups falling under the PLO umbrella, but for a diversity of foreign terrorist groups such as the Spanish Basque ETA, the German Red Army Faction, and the

Japanese Red Army.

The presence of this "PLO State" in Lebanon added to the existing tensions between Moslems and Christian sects, and helped fuel the fire of the civil war in that nation which lasted from 1975-1980 in which almost 100,000 people were killed and a quarter of a million wounded. Finally, PLO incursions into northern Israel became so intolerable that Israel launched her invasion of Lebanon which was labeled "Peace for Galilee" in June of 1982.

PLO Organization—What the PLO lacks in military strength, it makes up for in organizational ability and the strength of its institutions. The chief institutions of the PLO are:

-The Palestinian National Council (PNC). The PNC is a quasi-parliament which meets every few years, and may be convened in response to any development judged to be pertinent to the Palestinian cause, such as the Egyptian-Israeli peace treaty. The PNC sets basic policy guidelines in both external and internal affairs;

-The Executive Committee. This is the governing body responsible for the day-today functioning of the PLO with its various

departments and bureaus;

-Central Council. This is the advisory body to the Executive Committee. Drawing its membership from the PNC, the council constitutes a paraliamentary watchdog over the actions of the Executive Committee when the PNC is not in session.

The Fatah is the central core of the PLO and is the largest and most important of the various PLO groups. It was the Fatah which constituted the bulk of the PLO regulars which were expelled from Lebanon by the Israeli army in 1982. Within Fatah, there are several political and security groupings:

-General Conference. The supreme decision-making body;

-Revolutionary Council. Deals with political and operational matters when the general conference is not in session;

-Central Committee. Comprises the leadership of Fatah.

The Fatah also operates security and terror groups. They are:

-Western front. Currently lead by Abu Jihad, this terrorist group deals mainly with targets in Judea-Samaria in Israel;

-United Security. Last known leader

was Abu Iyad. This group deals primarily with organizational and security problems;

—Security and information. This section was led by Abu al Houl and is responsible for internal security and for "preventative actions," which often means the assassination of political rivals within the PLO. It also aids the Western Front and United Security groups with information and intelligence;

—Central Operations. Last known leader was Abu Muatassem. This group deals with Fatah's military structure and co-ordinates the activities of the various Fatah groups in the field.

Israeli Response—The state of Israel has lived in a state of siege since its very inception. On the northern border, the PLO has used its sanctuaries in southern Lebanon to shell, rocket, and harass the people of Galilee for years. The same was true of the Golan Heights, where Syrian and PLO gunners pounded kibbutzes until the Six Day War in June of 1967.

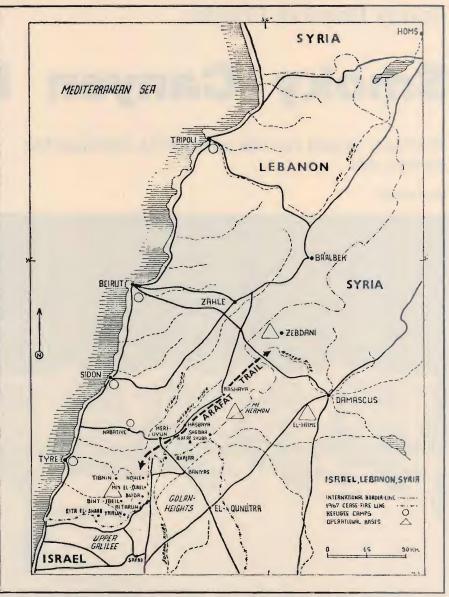
Although a conventional fighting force, the Israeli Defense Force (IDF) is also configured to combat the constant terrorist incusions from the PLO. Because of the constant PLO threat, as well as the other, more traditional types of threats from her Arab neighbors, Israel has compulsory military service for all men between the ages 18 to 29, and women from the ages of 18 and 25. Service is three years for men and two for women. The men are obligated for reserve service until the age of 55 and women up to the age of 34.

The threat of the PLO is countered, further, by two military organizations unique to Israel: the Nahal or Pioneer Fighting Youth which serves at border kibbutzes and high-risk areas, and the Gadna, which is similar, but also serves as a military-development unit building, farming, and protecting the new settlements.

The PLO threat is so pervasive within Israel proper, especially in the new settlements on the West Bank, that a Civil Guard, made up of thousands of volunteers, from high school youths to retirees, operate nightly in two-man patrols from some 450 neighborhood stations throughout the country.

Fatah Training—A new recruit, upon entry into Fatah, swears by the Koran in a solemn ceremony, that he will give undying loyalty to Fatah. After the swearing-in ceremony, the recruit is given several months training in commando tactics and the use of light weapons.

Those who display motivation and talent move on to advanced training in such diverse locations as Algeria, Syria, Lebanon, Iraq, Iran, Vietnam, North Korea and, since the mid-1970s, South Yemen, Cuba, and the Soviet Union. In these countries, the Fatah-PLO terrorists can also attend officer's training school, if selected, and are trained in advanced com-



Like the Ho Chi Minh Trail in Vietnam, the Arafat Trail was a PLO supply line for men and material to northern Israel.

mando warfare, and the use of mediumrange weapons such as mortars, katyusha rockets, and rocket-propelled grenades (RPG-7s).

By the middle 1970s, however, the PLO had splintered into several factions and although Fatah was still the largest of the PLO factions, it had strong competition from such groups as George Habash's Popular Front for the Liberation of Palestine, the Popular Democratic Front, the Vanguard of the Popular War of Liberation, and others. Like an amoeba, the PLO kept splitting into competing groups. Some were based on ideological differences, some on leadership loyalties. Some, like Sa'ika, were established by the ruling Ba'ath party of Syria to gain influence in, and finally take over the PLO. Some represented the partisan interests of Egypt and Iraq.

The year of 1982 was a year of crisis and critical evaluation for the PLO in several respects. First of all, the Iranian revolution and the rise of the fundamentalist Islamic

revolution has eclipsed the PLO struggle. The narrow, partisan interests of Palestinian nationalism have been replaced by the larger issue of the Islamization of the world.

New terrorist groups supported by Iran have captured the world's headlines, forcing the PLO into the background. The Fatah and Fedayeen guerrilla fighter pales in contrast to the Shi'ite Party of God truck bomber.

The expulsion of the PLO from Lebanon by the Israeli invasion has created a crisis in leadership in the PLO, as well as fracturing its power. No country was willing to take the bulk of the PLO forces, as they remembered the chaos caused by them in Jordan and Lebanon, therefore, the PLO forces were parcelled out in "penny packets" to a half a dozen Arab nations.

But the PLO is structured to endure. The resiliency of the organization is remarkable.

Ready Reserve Foods:

Smoky Canyon Retorts

'Softcan' meals for the survivalist, backpacker, hunter, etc. . . .

Staff Report



ILITARY MRE (meal ready to eat) foods are popular with the survivalist, hunter, backpacker and other outdoors enthusiasts.

These meals are light, require no special care in storage or transport and can be eaten right out of their containers without any preparation or can be heated for warm or hot meals if desired.

Along with military MREs being sold as surplus on the civilian market there are MRE-type meals produced specifically for civilians who want more in the way of taste and variety than military MREs offer.

Ready Reserve Foods, P.O. Box 697, 10498 Nancy Ave., Cherry Valley, CA 92223; (714) 845-6464, is now carrying the Smoky Canyon retort meals line.

Billed as "softcan food," Smoky Canyon retort meals are available in more than 18

varieties.

There is chili with beans, beef stew, chicken stew, vegetable stew, apples 'n' cinnamon, beef stroganoff, chicken ala king, salisbury steak, pasta 'n' beef, sloppy joe, sweet & sour chicken, chinese vegetables, turkey with gravy, beans 'n' franks, sausage 'n' gravy, corned beef hash, creamed beef, pork with gravy.

Additionally, Smoky Canyon has boilin-a-bag packets of rice and noodles to be used as "sidekicks" with the entrees listed above. These sidekicks increase serving portions by 11.2 ounces and are prepared in five to seven minutes. It is suggested that you pour the contents of a Smoky Canyon entree over the prepared rice or noodles for a delicious and more filling main meal. The term "retort" simply refers to the pressurized container in which foods are cooked. The food ingredients are put into a flexible foil pouch. The air is then drawn out, the pouch is sealed and the entree inside is quickly cooked in its own juices to retain the fresh and wholesome flavor. The food in the pouch is not frozen or dehydrated. It represents the high quality of the ingredients cooked in their own juices.

Storage life of these foods is at least two years.

For more information on the Smoky Canyon line of retort meals or ordering, or for more information about Ready Reserve's other fine products for emergency preparedness for individuals or groups large and small, contact Ready Reserve.



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U.S. MARINE CORPS

U.S. MARINE CORPS

The Marines are America's amphibious force-inreadiness. In Vietnam as in every Marine battle from Tripoil to Grenada, the individual Marine "grunt" was the nucleus of the Corps. This print by renowned military artist Peter Badock (Images of Var, Faces of War) shows a Vietnam era Marine armed with an M79 40mm grenada launcher. His uniform is forn and dirty but his face shows the determination that made the Marines a threat to America's enemies for two hundred years.

The Marine's slogan "First to Fight" has been borne out in all of America's wars and conflicts from the massive efforts of the Pacific Marine Force in World War II to the more recent smaller-scale commitments in Beirut and Grenada. There have been few occasions Indeed when the Marine's "few good men" have not lived up to their motto Semper Fidelis.

The first 300 prints are a Limited Edition printed on long-lasting museum quality paper. Also, available in open edition on poster stock and suitable for framing. Order No. CP9-LE (Limited Edition, signed and numbered by artist, museum quality paper, 15½x19½) \$50.00 postpald Order No. CP9 (open edition, printed on poster stock, 15½"x19½") \$9.95ppd -Shipped 1st CLASS in Mailing tube-

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At Home Or In The Boonies:

Lee Hand Press

If you want to save money and like to do your own loading, read on . . .

By Howard Reed

A MMUNITION RELOADING can be dangerous if done improperly and should not be attempted by persons not willing and able to read and follow instructions exactly.

Sounds like tough words, and they are. Because so many more people are taking up handloading today, both in an effort to save money on their overall ammunition costs and to allow themselves to develop special "pet" loads, some of us may think handloading is a snap, like making popcorn.

The truth is, like Richard Lee of Lee Precision states, primers and gun powders, like gasoline and matches, can be dangerous if improperly handled or misused.

If you class yourself as a person sincerely interested in saving a few bucks, who likes to concoct his own loads through handloading, and maybe even do so while out in the boonies, sitting on the tailgate of your 4x4, then this article is for you.

Lee Precision, Inc. (4275 Highway U, Hartford, WI 53027) has long been known for their economically priced handloading equipment. Gear that will not only save you money right off the bat, but will also cut your ammo costs. Having used Lee products for years, I'm speaking from experience. Their stuff is unique, well made and inexpensive. True, it's not as massive as some of the big rigs, and maybe not as fancy, but the price tags aren't as big and fancy either. What really counts in these matters is Lee equipment will produce precision ammo that will satisfy the needs of the shooter/plinker/hunter.

The most recent piece of Lee equipment I picked up was their Hand Press, which looks something like an oversized nut cracker (it's 11 inches long). It features a diecast aluminum body and lever, steel ram, links and pins. What makes this press unique is it's designed to be hand held. It doesn't have to be bolted down to a heavy work bench. You can operate it with both hands, or even one hand and a leg, leaving the other hand free to handle bullets, etc. Loading die sets are available for a variety of rifle and handgun cartridges. Because I shoot .38 Special/.357 Magnum a lot, this was the first die set I ordered. In this way I could really check the system out before I invested in additional die sets.



The author sits on the tailgate of his Bronco loading with the Lee Hand Press.

The Lee Hand Press is ideally suited for use while you're seated. A right-handed person should hold the tool in the left hand and let the lever rest against the left leg. By pushing the tool against your leg, you can move the lever and raise the ram, freeing your right hand to insert the case, primer or bullet.

According to Lee, you will shortly find that you can quite comfortably sit in your favorite chair with your left elbow resting on the arm for lengthy loading without tiring.

As with any handloading, regardless of whose press you're using, you inspect your cases carefully, looking for split necks, indications of head separation (on bottle-neck cases), or other defects. Unless you're just going to concoct plinking loads, you should sort your cases out by manufacturer. In other words, you do not want to reload using a mix of, say, Federal, Remington, Norma, and Winchester cases. Why? Because some cases have thicker walls or maybe thicker heads. This means their capacities will vary, and thus

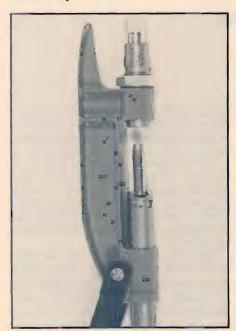
pressures and velocities will be different.

Pressures and velocities can also be affected by case neck thicknesses. If some cases have thick necks, you might find bullets are harder to seat, and once chambered in the firearm, pressures can rise because it takes more force to push that bullet from the case mouth. Not only is this practice dangerous, but accuracy will be erratic.

Once your cases are segregated, Lee recommends you wipe a thin film of Lee Case Lubricant onto each case with your fingers. Fingers are the best way of lubricating a case because any grit that could damage the die is wiped away. With Lee dies you can lube the entire case, including the neck and shoulder where you're working with bottleneck cases. The case may be immediately sized or you can let the lube dry. Lee Lube can be thinned with up to four parts water for easier lubrication and greater economy. If thinned, let the case dry before sizing.

The firm informs us that if for any reason you do not use Lee Resizing Lubricant, be very careful not to contaminate the powder or primers. All other brands are oil base and they have detrimental effects on powder and primers. Because of their stickiness, they also attract grit that can damage the die.

Getting Started—The first operation involves installing the shell holder into the ram head, just as you would on a regular bench mount press. Next you screw in the sizing die, which, like the other dies, features a rubber O-ring on its locking nut. With the press lever in the up, or closed, position, screw the die down until it contacts the shell holder and forces the press lever 1/4-inch off the lever stop. If you use carbide dies, do not move the lever off the stop.



The bullet-seating die features a neoprene O-ring at its base as do other dies to prevent damage to the press body.



With the Lee shell holder installed on the press ram and size-capping die in place, fired cases can easily be prepared for loading.

You've already inspected and lubed your cases, so now you can resize/deprime them one at a time. You simply slip a case into the shell holder, squeeze the levers together, open them and remove the sized case and repeat the operation. After you size about 20 rounds, remove the shell holder and dump out the spent primers.

Once you've sized all the cases, you're about ready to prime them. If you're really meticulous, you might want to clean the primer pockets first. If so, go for it. Now you can replace the shell holder with the priming tool. You'll note there are two spring loaded primer cups; a small and large. If the wrong one is in the priming tool, pull it out and install the correct unit. They're a press fit, so it will take some pulling and pushing to switch them. Replace the sizing die with the short, aluminum Ram Prime adaptor. Screw the adaptor into the press by hand until it's seated tight. Now slip the shell holder into this adaptor.

With clean hands, set a primer, anvil up, into the primer cup, and slip a sized case into the shell holder. Now elevate the press lever until the ram is to the top of its stroke. This will seat the primer. Lower the lever, and repeat this procedure until all cases have been primed.

We are now ready to begin powder charging. Install the expanding die in the Hand Press, screwing it in one turn short of touching the shell holder that has been replaced in the ramhead. This die flares the case mouth for easy bullet insertion. Turn deeper if you discover the flare isn't enough to allow the particular bullet you're using to get a start into the mouth. Enough would be approxiamtely .040- to .050-inch, but no more than required to start the bullet.

You can charge your cases with powder by dumping it directly into the Lee funnel inserted in the Lee Expanding Die. Or you can charge all the cases while they're in a loading block as you would with other presses. If you use the .5cc Lee Powder Measure furnished with the .38 die set, you must use the Lee Charge Table. We should point out that this warning is molded into



To use the Lee Hand Press, grip the main body as shown and move the lever with the other hand.



The Lee powder dipper can be used to load cases in the field.

the handle of the little powder measure, but it's very difficult to read.

After you've charged all your cases, install the bullet seating die into the press. Screw the bullet seating die in until it touches the shell holder and back it out one full turn. Now back the aluminum adjusting screw out until its knurled head is about 3/8-inch above the top of the die. If it's too deep, that first bullet might be seated too deeply.

Now place a bullet on the case mouth and guide it into the die. Raise the ram to the top and withdraw. Check the bullet for proper seating depth. If it's not enough, screw the knurled adjuster in and repeat the seating process. Adjust the die until the bullet is properly seated. If the bullet is cannelured, seat it until the cannelure (or crimp groove) is almost completely inside the case. Then screw the die in just enough to apply a good crimp. Attempts to apply excessive crimp will crush the case. For proper crimp, all cases must be trimmed to the same length. Do not attempt to crimp if there is no crimp groove in the bullet.

This is all there is to it. After you get that batch of ammo loaded, you're ready to go shooting.

Wrapping things up, we should emphasize that if you order your Lee Hand Press (#90685) and a carbide three-die set at one time, you'll save money. The complete set shown here runs for about \$54.98 list price. Other handgun die sets are available for 9mm through .45 ACP. To get you started, send \$1 for your own 1987 catalog—then go from there.

Luigi Franchi/F.I.E.:









There is noticeably more recoil with the SAS 12 compared with its gas-operated relative the LAW 12, as demonstrated in this and the color photos on the opposite page.

SAS 12 Shotgun

The new pump action-only lightweight variant of the SPAS 12 shotgun . . .

Staff Evaluation

N the September issue we reviewed the new Italian-made Franchi LAW 12 semiautomatic 12 gauge shotgun. This lightweight, gas-operated version of the SPAS 12 semiauto/pump shotgun from Franchi has a sibling—the new SAS 12 pump-action 12 gauge.

These two weapons are similar in many ways, the main difference between them being that the LAW 12 is semiauto only and the SAS is pump only. Their forebear, the SPAS 12, can be operated in either semiautomatic or pump mode but is considerably heavier and more complicated than these two new firearms.

The SAS 12 weighs in at 6 7/8 pounds empty, with an overall length of about 41 inches and a barrel length of 21 1/2 inches—essentially the same dimensions as the

LAW 12 which is slightly heavier. And like the LAW 12, the SAS 12 has a matte black finish, identical European wood buttstock and nylon pistol grip and the same capacity of 8 3/4-inch shells in the magazine plus 1 in the chamber. And the SAS 12 has the same dual safety system as the LAW 12: the main carry safety lever located on the right side of the receiver for general use and quick employment safety on the left side of the receiver for tactical situations.

The carry safety lever is pointed forward to fire the shotgun and back for the "on safe" position. This safety blocks the hammer until you are ready to fire and should only be used when the SAS 12 is cocked. With bolt closed and hammer uncocked, engaging the carry safety prevents opening the bolt and cocking the gun. The

quick employment safety blade is moved forward to fire and back for safe. It disconnects the trigger and unlocks the bolt. Don't use this safety as the main safety.

Franchi Variomix chokes fit all SAS 12 shotguns. They are available in full and modified versions and are both 4 inches long and add 2 1/2 inches to barrel length. They are easily installed by unscrewing the thread protector at the muzzle and screwing them on.

The SAS 12 can be loaded in the standard method of loading the magazine and then operating the bolt to feed a shell into the chamber, or by opening the bolt, placing a shell in the chamber and closing the bolt. To unload, either turn the shotgun upside down, press the magazine shell latch with your index finger and let the

shells fall from the magazine tube one by one, or simply (but carefully, since the hammer is cocked) use the pump mechanism to cycle the shells through the chamber.

In test firing the shotgun we took it out on two occasions to public shooting areas and tried a variety of 12 gauge ammunition in it. This shotgun, like the LAW 12, uses only 2 3/4-inch 12 gauge ammunition. Any type of 2 3/4-inch 12 gauge ammunition can be fired in the SAS 12 and we used rifled slugs, single-ought and double-ought buckshot and several types of game loads.

The SAS 12 performed perfectly with all ammunition fired in it and there were no malfunctions of any kind experienced by shooters. There is considerably more recoil and muzzle rise with the SAS 12 than with its relative the LAW 12. The gas operation of the LAW 12 really cuts down on recoil. Shooters who used the SAS 12 and LAW 12 noted the difference in recoil but did not find the SAS 12's recoil to be excessive or unmanageable. A bead front sight helps in aiming the SAS 12.

We found the SAS 12 to be a handy, light and easy to use 12 gauge and believe it is a reliable piece of firepower that will serve its owner well if taken care of properly. This weapon could be effective for personal defense, military or law enforcement applications.

Suggested retail price of the SAS 12 is \$524.95. See your gun dealer or contact the importer/distributor, Firearms Import and Export Corp., (F.I.E.), Dept. ASG, P.O. Box 4866, Hialeah, FL 33014; phone (305) 685-5966.





The carry safety is for general use.



The quick employment safety is used for tactical situations.



Adequate Precautions:

Infectious Disease Control

Avoiding or limiting exposure to potentially life-threatening illnesses . . .



The Parr Infection Control Kit contents as packaged.

By Todd M. Stanford

OU stop at the scene of a one car accident in the wee hours of the

The driver, the only occupant, apparently fell asleep behind the wheel. The vehicle has struck an electric pole and a stone wall. The driver is trapped in the car. He is turned sideways, his head hanging out the window, partially scalped.

The patient has a good level of consciousness but will require over an hour extrication time. You assist in bandaging and immobilizing the head.

You finish the drive home, the patient's blood drying on your hands and clothes. You have a real good feeling inside; you "got involved," helped your fellow man. Later, when you find out the guy was returning home from a local "gay" bar, your feelings change to those of outrage and fear.

An elderly neighbor calls you on the phone. She had gone to a friend's house nearby and could get no response when she knocked on the door. Fearing that he is sick and can't answer the door, she wants you to get into the house and check on him.

Using your credit card, you "slip" his lock and gain entry. Once inside the house you notice a sickening odor. Exploring into the next room you find an elderly male lying on the floor. He has obviously been dead several days. The corpse is extremely swollen. A gas space heater is turned up as far as it will go. The room is like a sauna. You walk over and turn the heater off,



then open a window. Returning to the corpse, you check for any obvious indications of foul play. Finding none, you return to the street below.

You call the police and explain the situation to them. While waiting for the police, the distraught neighbor tells you her friend has been "turning yellow" for the past month, and getting progressively worse. You quickly try to remember what you touched or may have walked through in the apartment.

In the above scenarios (based on actual incidents) we find helpful citizens being exposed to potentially life-threatening infection.

Besides the AIDS danger, there are approximately 200,000 cases of hepatitis B in the United States. When we start adding in figures for infectious mononucleosis, tuberculosis, syphilis, and the many other infectious diseases with which we can come in contact, there are many disease threats to watch out for. There seems to be a prevalent attitude among active, healthy people that "It can't happen to me." An attitude that our systems can fight off anything to which we're exposed. This just isn't true.

As we should all well know, there isn't a magic vaccine which will immunize us against everything to which we're exposed. We cannot be selective as to which people we will help, and if we could, what would the limits be? The only viable solution then, is to incorporate adequate precautions when handling the ill or injured.

Modes Of Transmission—To effectively practice infection control, we should be aware of the routes an organism can take from a host to a receiver. These are known as modes of transmission.

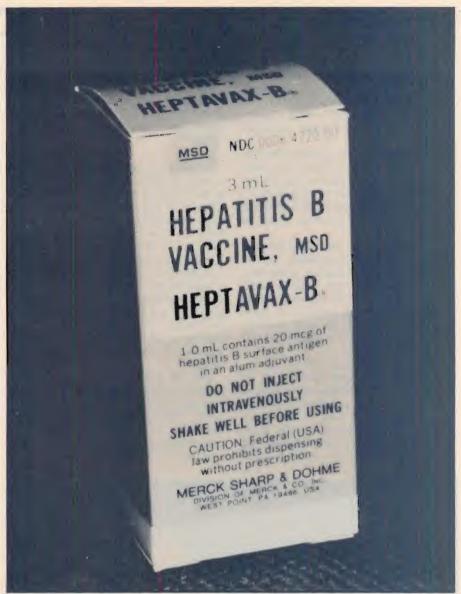
Aerosols—Tiny droplets of a transfer medium. The best example of aerosol transmission is having a patient sneeze or cough on you. Tuberculosis, infectious mononucleosis, and meningococcal meningitis are primarily transmitted by droplets.

Fecal-oral route—Infections by this route usually result from contact with a patient's solid waste and subsequent contamination of materials put into the mouth, i.e., pencils, food, fingers. Hepatitis A and viral meningitis are believed to be transmitted by this route.

Vectors—Infection by this route involves a living carrier, such as fleas, ticks, and mosquitoes depositing the infectious organism onto food, or into the body of a recipient. Malaria, rocky mountain spotted fever, and plague are transmitted in this manner.

Body fluid contact—Infection by this route requires the recipient to come into contact with an infected person's blood, saliva, excrement or other body fluid. The causative organism can then enter the recipient's body through a break in the skin. AIDS, hepatitis B and syphilis can be acquired this way.

Protection—Unless we wish to refuse to associate with any other human, we will



Heptavax hepatitis B vaccine.

sometimes be exposed to infectious disease. What we can do is incorporate a three-aspect approach to infection control: chemical, hygiene and physical barriers.

It goes without saying that those of us who face frequent exposure to a variety of illnesses should be immunized for as many of these diseases as possible. In addition to those immunizations we received as children, immunizations exist for hepatitis B and influenza. The Heptavax hepatitis B vaccine is administered parenterally (by intramuscular injection) and followed up by an antibody titer. Once the antibody titer is at an acceptable level (usually this requires more than one injection), immunity lasts for about 10 years. A tine test should be administered periodically. Gamma globulin is usually administered after exposure to hepatitis B.

The chemical aspect, then, involves immunization, testing and follow up after suspected exposure. This will aid in either preventing or limiting most diseases.

Good hygiene is one of the worst enemies of organisms which cause infection. Keep your finger nails short. This will provide 10 less places for organism-laden material to escape detection. Hands should be washed thoroughly using a good bacteriastatic soap anytime you come in contact with a body fluid.

Definitely, contact with a body fluid such as blood or excrement requires very thorough washing with an agent such as Betadine. Many people have a tendency to shy away from using Betadine due to its discoloring effect on the skin. Tests have proven it to be the most effective bacteriastatic soap on the market. Each individual must decide for himself if the discoloration is that much of an inconvenience. Clothing should be changed as soon as practical if they become soiled with another person's body fluid.

Another part of hygiene we must consider is care of our equipment. A rucksack placed under the head of an injured hiker, for example. Metal and plastic materials should be scrubbed using a 10 percent solution of a chlorine bleach such as Chlorox. Special attention should be paid

Infectious Disease Control

to this scrubbing whenever body fluids have contacted the materials you are cleaning. Disposable items such as rescue blankets should be discarded after use on a bleeding or incontinent person. Do not attempt to clean and reuse disposable items.

Physical barriers are probably the least used with a living patient. For some reason, we feel the patient will be insulted if we put on rubber gloves prior to touching him. Anytime contact with body fluids is a possibility, rubber gloves should be worn.

Examining gloves are ideal for this. Sterile gloves are unnecessary, as the gloves are for your protection, rather than the patient's. If you carry a pair of rubber gloves in your first aid kit, they will be available when you need them. It should take less than five seconds to put them on. Even with a patient in cardiac arrest, the lost time is negligible.

The only difficulties the author has encountered with using gloves is on IV starts; due to the reduction of tactile sense and the difficulty of applying a tourniquet without getting the end of the glove's finger stuck under the tourniquet. It just takes a little practice. Disposable examining gloves should also be worn when cleaning contaminated equipment.

Another consideration is the use of a surgical mask when dealing with patients presenting upper respiratory disease signs and symptoms. This should be of particular concern if the patient is febrile (has a fever).

Corpses—In case of death when the cause is uncertain it is imperative that you protect yourself as much as possible. Parr Emergency Product Sales of Galloway, Ohio, is marketing what the author considers to be an extremely useful set for this type of call. Dubbed the Infection Control Kit, it contains two Tyvek suits, two pairs of shoe covers and gloves, two surgical masks, two hair covers, a patient drape, a convenience bag for vomitus or urine and a contaminated materials bag for disposal of the suits after use. Just because a patient's been dead for several days doesn't mean the organism that killed

The kit would also be very useful in situations where personnel are dealing with infected patients known or suspected of having life-threatening diseases and in situations involving large numbers of trauma patients where contact with large amounts of body fluids is expected.

Many organizations are now supplying their health care providers with airway adjuncts and directives to utilize the adjuncts for resuscitation, rather than risk infection from performing mouth-tomouth rescue breathing. This concern over contracting a disease, as well as the aesthetics involved, has in the past perhaps caused some hesitation on the part of a potential rescuer. In light of this concern, Laerdal Medical Corporation of Armonk, New York, is now marketing a pocket mask with a disposable one-way valve. To the relief of those of us who own the old style pocket masks, the older masks will also accept the one-way valve. The one-way valve redirects patient exhalation and other matter back towards the patient's face. The rescuer need not remove his lips from the mask to allow for exhalation. Like the original pocket masks, the new ones are also available with a supplemental oxygen inlet. While there are other masks being marketed utilizing this concept, in the author's opinion, the Laerdal pocket mask does what it's supposed to, affordably. This too is a vital part of a good first aid kit.

Proper, consistent use of good infection control procedures will greatly reduce the number of diseases you will pass on to other contacts and acquire yourself. While the average person does not come in contact with the ill or injured on a daily basis, infection control is everyone's reponsibility.

We carry a first aid kit with the hope we'll never need it and the realization that we probably will. The price of a \$10 or \$15 pocket mask is small indeed compared to the piece of mind that comes with having one. Whether assisting at an accident along the highway or in the woods, or at the scene of a large-scale disaster, be aware of what you can catch and how it is caught. Take adequate, appropriate precautions to protect yourself. Always take care of number one first.



The Res-Q-Flo pocket mask.

Pocket Mask Venders

Dyna Med 6200 Yarrow Drive Carlsbad, CA 92008

Laerdahl Medical Corporation P.O. Box 190 Armonk, NY 10504

Res-Q-Flo Globe Safety Equipment P.O. Box 7248 Dayton, OH 45407

Survival Technology, Inc. 8101 Glenbrook Road Bethesda, MD 20814



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130 \$6.00

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This manual presents six different methods of converting the semiauto MAC 10 to FULL-AUTO. These methods range from very simple, full auto only conversions to more involved, selective fire versions. All modifications are easy and require no difficult machining operations. Conversion techniques range from the mere removal of metal to the addition of simple, removable parts. 51/2x81/2, softcover, 52 pages, profusely illustrated. 010 \$6.00

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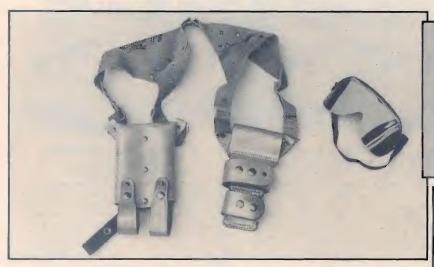
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Prize No. 2, Calico M-100 .22LR Carbine with 100-round magazine from American Industries, Dept. ASG, 405 E. 19th Street, Bakersfield, CA 93305, This Space Age-styled, lightweight carbine comes with detachable bipod and 100-round magazine, one of the newer .22s on the market. It weighs only 5.7 pounds fully loaded. The same weapon tested and featured in the June 1987 issue of ASG Valued at \$300.

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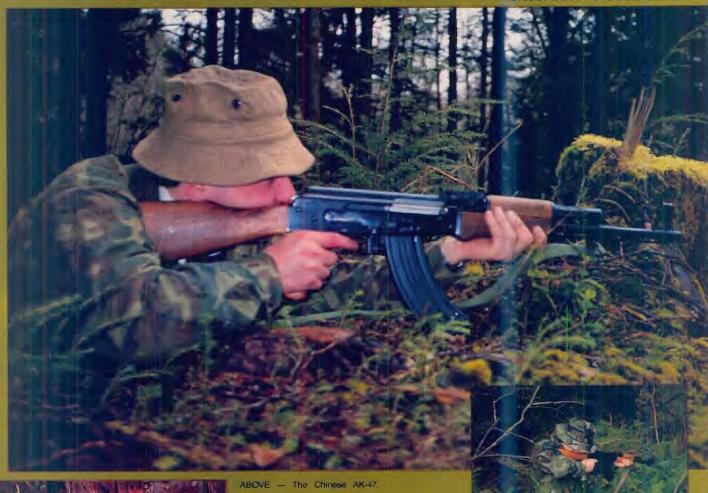
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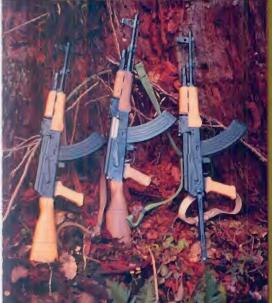
AK-Type Rifles

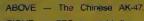
Plinkers and combat arms . . .

By Donald M. Dineen

PHOTOS BY THE AUTHOR and STEVEN D. SMITH







RIGHT — FEG in rapid fire.

LEFT — FEG and Chicom with wood stocks and FEG with folding stock.

BELOW — Hungarian bayonet, left, and Chicom bayonet for AK-47s. The Hungarian bayonet is insulated for electrified wire cutting.



(The author states that all AK-type rifles are adjusted for windage as well as elevation using the front sight post but the front post is difficult to move using the drift method. His company, DMD 2 Company listed in the resource list accompanying this article, sells a tool specifically designed for making windage and elevation adjustments on the AK-47, AKM and SKS rifles)

F you have always wanted to own an AK-type rifle there has never been a better time than now. We are seeing a larger assortment of AK variants than ever before, with unbelievably good prices for both guns and ammo.

Some folks will not like buying guns produced in socialist countries, so they can willfully miss out on some real bargains from the Peoples Republic of China (PRC), Hungary, former Soviet-client Egypt, and the very independent Yugoslavia. If you look upon buying any goods from these nations as not in our best interest I would recommend some further thought on the subject. When we buy sporting arms, I use the term loosely, from these nations we are not only getting a real bargain but are helping everyone involved by giving those nations and their workers a strong dose of how the free enterprise system works to their and our betterment. If you can't tolerate such trade you're missing out on some fine shooting guns and ammo.

Over the last few years I've had a continuing relationship with a wide variety of AK-type rifles. Since 1976 I have been fortunate enough to have owned some of the finest AKs around. Although I now only have a couple Hungarian SA85M (AKM, Automatic Kalashnikov, Modernized) I have owned the very fine Finnish Valmet Model 62 and the very true to the Soviet pattern Egyptian Maadi. Several friends have the new Chinese AKS rifles and are very pleased.

We have now fired several thousand rounds through these and past owned 7.62 x 39mm rifles and have come away with a great deal of respect for both the rifles and the cartridge.

The 7.62mm (type-designated as the model 1943) is about as ideal a combat cartridge as has ever been produced. According to Dr. Edward Ezell in his books *The AK-47 Story* and the 12th Edition of *Small Arms of the World*, the short Soviet round was developed from the late 1930s into World War II. Obviously the German 7.92 x 33mm cartridge and associated rifles had a good deal of interest for the Soviets.

Soviet assault rifle development started prior to World War I and hasn't stopped since. Although the Soviets and some Warsaw Pact nations are switching over to the 5.45 x 39mm cartridge it is the short 7.62mm that most interests us now.

There has been a great deal of material printed about the performance of the U.S. 5.56 x 45mm and the 7.62 x 39mm cart-

BELOW — Front sight guards vary. Here are the full-hooded Chinese and Hungarian open type.





ridges. The 5.56mm loadings with either the M193 55-grain FMJ bullet or the new 62-grain NATO loading is a more lethal load than either the 7.62mm M43 or 5.45mm cartridges at normal combat ranges. Dr. Martin Fackler and his associates at the Division of Combat Casualty Care, Letterman Army Institute of Research have found the wounds caused by the 5.56mm to be much more devastating than either of the Soviet rounds. It has also been reported that under many circumstances the wounds are hard to distinguish from one another since so many other factors contribute to a bullet's performance.

When firing military 7.62 M43 ammo you can expect very adequate performance at all ranges that the AK can be expected to hit. The power is in the low-end 30-30 range. With softpoint ammo the wounding ability is greatly enhanced and it can be expected to perform as well as a likeloaded 30-30.

In the past one of the biggest stumbling blocks to AK ownership was not only the lack of guns but affordable ammunition. AK shooters can rejoice. I have never seen such an assortment of loads available as there are today. There are Chinese, Korean, Yugoslavian, Swedish, Finnish, and even U.S. rounds to be had.

If you can live with using non-reloadable, corrosive-primed ammo for less than 16 cents per round, the two types of





LEFT — The FEG rear sight is adjustable to an optimistic 1,000 meters, left, while the Polytechnologies rear sight is adjustable to 800 meters.

ABOVE — Some woodstock models have a compartment for the tool kit.

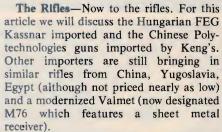
Chinese ammo I have used are excellent stuff. It has been noted that the new Ruger Mini Thirty doesn't work well with this ammo. However, I have shot it through close to 10 different AK and SKS rifles with absolutely no problems. Unlike some other brands, the Chinese ammo is well sealed against the elements. It has proven to be very accurate and has delivered velocities above 2,300 fps in AK rifles.

The "problem" of corrosive primers is easily solved with very little bother. After shooting I simply clean with the old, and cheap, U.S. Army bore cleaner (the stuff that smells like a hot telephone pole) or with water. The priming compound produces a salt compound upon firing that will attract moisture if it isn't removed. With most AK rifles this is not as urgent a process as it might be with earlier U.S.made military small arms since most have chrome-plated bores. If particular attention is paid to the gasblock, cleanup is easy. If you simply won't live with corrosive ammo there is excellent, although more expensive non-corrosive ammo from Korea (PMC military or sporting and reloadable) or Yugoslavia (Hansen and Mitchell). All of it is first-rate ammo and is still very attractively priced. Some lots of Chinese ammo carry a steel core that can improve penetration. These loads will sometimes shed the jacket and lead but the core continues on where other more conventional bullets are defeated.

AK-Type Rifles



Field stripping the AK-47 is fast and easy.



Both the Kassnar/FEG and Chinese rifles are very close to the Soviet pattern in that they feature the AKM-type construction, retain open sights, have no bolt holdopen device and can be had with either a fixed-stock of wood or a folding metal stock. Of the two basic types I prefer the Hungarian rifle since it is extremely well made. But this in no way is meant to slight the PRC rifle.

FEG rifles feature a phosphated finish covered with a non-glare black paint on all metal surfaces except the bore and the chromed gas piston. The wood parts are a very pale blond Beech that is very pleasant to the eye when new but is very quickly "aged" when exposed to a steady rain and handling.

Chinese versions feature a conventional blued finish that is not as weather resistant, but is very attractive. The wood is solid Chu which is said to be non-rotting. It is also more attractive than the FEG but seems somewhat softer

Both rifles operate in the same fashion. The AK reputation for absolute reliability is unquestioned. If there was ever a soldier-proof rifle it must be the AK. The positive gas operated mechanism has a very generous tolerance built in so the guns will function when exposed to water, snow and sand. There is no disputing the fact that the AK will function in places where the AR-15 rifles will fail.

To fire the rifles first load a 30-round magazine (optional size 15-, 20-, 40- and 75-round mags are available) in the conventional manner. Insert the front edge of the mag in the well and pivot it to the rear until it is latched. With the safety in the down position pull the bolt to the rear and release. A round will be chambered and the rifle is now ready to shoot. If you want the safety "on" pivot it up. The safety has





been criticized for being too awkward and clumsy to use. It can be both, but I can live with it. If operated slowly it doesn't make much more noise than does a Mini-14 safety. If you want to fire move the safety down and let fly. The trigger pulls are not what you could call ordinary. They seem to make a long clean sweep unlike anything else I've tried. Not match grade but very good once you have become accustomed to them. Recoil is mild and will not bother anyone. My pre-teen children take great pleasure in shooting the AKs from the hip.

The biggest complaint leveled against the AK is its sometime reputation for being inaccurate. This is true to a limited extent. The open sights give a crude (when compared to the AR-15) sight picture very much like a good set of pistol sights. Under actual field use we have found that the ability to place very rapid hits snap-shooting out to 50 yards is simply astounding. Groups under 2 inches at 50 yards can be made with the FEG rifle when fired from a field rest. Bench groups at 100 yards are, depending on shooter skill, normally between 4 and 6 inches. Now we all know that the AR-15 will do better and can maintain an edge all the way out to 300 yards. But if we keep in mind the fact that most combat takes place at very short ranges, even in the desert, we soon find that the AK is adequate for its intended use. These are not sniper rifles but obviously have been adequate for over 35 years. Although it should be noted that the Soviets adoption of the 5.45mm cartridge is a successful attempt to increase their soldiers' hitting ability. In my area, which is very heavily timbered with dense underbrush, we have found these rifles to be nearly ideal. Any vet that fought in jungle environments will tell you how effective the AK can be.







Both rifles come with a complete, at least standard, tool kit that includes a front sight elevation tool. All sight adjustments (including windage) are made using the front sight for zeroing. The rear sights are graduated from 100m to 800m (Chinese) or to 1,000m (Hungarian). Both have a battle setting when the adjuster is moved fully to the rear. This setting is designed to be used at all ranges to beyond 200m with no need to make further adjustment. This is what would be termed point-blank sighting. That is the ability to aim and hit a man-sized target with no further sight adjustment. I prefer to zero my rifles to hit at point of aim at 100m. For all practical ranges it probably could be left on the 100m setting at all times. If the need to engage a 300m distant target is presented it would pay to elevate the rear sight. The 7.62mm round is not noted for its flat shooting ability. All Soviet-pattern AKs I've used required zeroing as they don't shoot to point of aim out of the box. This presents a problem when it is time to change the horizontal ("windage") setting since the sight element is difficult to move accurately using the drift method. I manufacture a tool designed specifically for making windage and elevation adjustments on AK-47, AKM and SKS rifles. It

is the only tool I know of that does this easily without the need to use a hammer and drift punch. As long as you continue to use the same ammo the sight normally needs no further zeroing. (See editors' note at beginning of article for details.)

Takedown is very simple. First clear the weapon of any ammo by removing the magazine and pulling the bolt to the rear smartly to clear a chambered round. Allow the bolt to go forward. Depress the top cover latch at the rear of the action. Lift the cover clear. Push forward on the recoil spring and guide and lift it from its recess. Pull the spring clear. The hammer should already be cocked (while clearing the weapon) so you can pull the bolt carrier and bolt fully to the rear and up, freeing it from the receiver. The gas tube/handguard latch on the rear sight base is rotated up about 90 degrees (the tool kit container or other tool is sometimes needed) and the tube is lifted clear. The forearm can be removed if required by rotating the latch and sliding the unit forward.

While cleaning the rifle particular care is required to clean the gas block and gas port. Both rifles come with a gas port ream that may be required under some extreme conditions. If you use corrosive ammo scrub this area completely and run a pipe cleaner saturated in bore cleaner into the port. A shotgun bore brush works well for cleaning the handguard tube assembly. Reassemble in reverse order after giving mating surfaces a light coat of oil. It is very easy. Any uneducated third-world freedom fighter can attest to the ease of use.

Other Features—There are features some folks won't like. All AK rifles are short stocked and very tail people will find the rifles to be less handy than an FAL. No bolt hold-open feature is irksome to many, but since somewhere around 50 million

AKs don't have them it must not be critical. The open sights are not as precise as a good peep, and hitting man-sized targets beyond 200 yards off-hand can be tough. If you need long-range capability these are not the guns for you. Nighttime muzzle flash is considerably more than that seen on full-sized AR-15s. If you are worried about giving away your position this is something to be concerned with. The canted muzzle breaks work well on the full-auto guns but have less noticeable effect on semiauto fire.

The fixed-stock versions seem to handle much better than the folding versions. It has been stated that the folding metal stocked versions offer an "unstable firing platform." I don't find that to be the case. I find no difference in shooting performance. The folder is *not* as comfortable to use. It is much more awkward to use since the top of the butt piece snags on any and everything. If storage space is critical the folding stock can be nice. Although I have both versions I greatly prefer the woodstocked version for field use. Overall length is 35.3 inches for the fixed versus 26.2 inches for the folding stock model collapsed (34.6 open).

The Kassnar rifles come complete with a beautifully made insulated wire-cutting knife/bayonet, leather sling, takedown/cleaning tools kit, oil bottles, gas port ream, and three 30-round magazines. The Chinese guns, depending on wholesaler, come similarly equipped (one to four magazines), with either a detachable bayonet/knife or folding attached model (Type 56 pattern) and a web sling. Optional Chinese 40-round and 75-round magazines can be had.

Genuine PLA three-cell chest pouches are available very reasonably. I found them to work very well, although the steel magazines dramatically effect a hand-held compass when used close to the chest.

Globe Militaria has captured AK mag pouches in an astounding variety all at nice prices. The Israeli Defense Force liberated them from the PLO types much to our benefit

The photos show the differences between our test pieces. I am sure your choices would be as difficult to make as mine as both offer excellent value. The going rate for both is around \$400 to \$500 depending on your source and how friendly your dealer is. It is getting harder to find the Kassnar rifles since their import permit was for a limited amount (this may change).

Ammo can now be ordered by mail (but shipped UPS) from many dealers. I have found it as low as 11 cents per round prepaid. At these prices it doesn't pay to reload. Practice sessions are not as painful as when we were required to shoot Lapua military ammo costing over 30 cents per shot. These prices remind me of the 1960s and my old M-1 Carbine. Those good old days are here again.

Resource List

Below is a partial list of AK rifles and ammo wholesalers. Your favorite dealer can order through them or one of several others not listed.

Kassnar Imports, Inc. P.O. Box 6097 Harrisburg, PA 17112 (717) 652-6101 Hungarian rifles and pistols

Keng's Firearms Specialty, Inc. P.O. Box 1176 Riverdale, GA 30274 (404) 996-2079 Chinese rifles, pistols, ammo and accessories (great selection)

Valley Gun Distributors 18526 Parthenia Street Northridge, CA 91324 (800) 423-5430 (Jaun) Rifles and ammo all types as available

Globe Militaria, Inc.
RFD 1 Box 269
Keene, NH 03431
(603) 352-1961
Pouches and accessories (best selection of captured AK pouches I've seen)

3411 Lake Center Drive Santa Ana, CA 92704 (714) 957-5711 Yugoslav AK-47, RPKs (heavy barrel AK-47s) and SKS Rifles and accessories

Mitchell Arms, Inc.

P.I.M.C. 2215 "J" Street Sacramento, CA 95816 (916) 446-2737 Good assortment of Chinese rifles, plstols and ammo

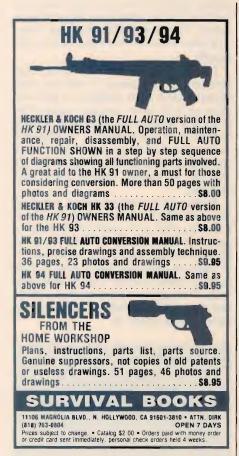
DMD 2 Co. (mall order) 821 Val Vista Drive Montesano, WA 98563 (206) 249-3450 AK sight tool (windage) \$17 PPD

Several other companies offer AK goods on "sometimes" basis. Have your dealer check with his favorite distributor for the latest items as things are changing continually.

Using the DMD 2 tool for windage adjustment, left, and elevation adjustment.









Winterizing Your Wheels

(Continued from page 17)

acid around.

The chemical process also causes some heat, which is why the cranking action starts slowly on a winter morning, and then quickens as the electrolyte warms up. This is one good reason for the practice of cranking for a few seconds, and letting the battery rest. The first shot begins a warming down inside the cells, which will take a few seconds to complete. Also, that starter isn't designed for long-term cranking, and more than 15 seconds of running can damage it seriously. Gasoline also needs more time to evaporate at low temperatures.

Frequently, the cause of battery failure is a dead or dry cell. In the old days, we merely removed one cap and poured water in the dry cells. In today's supposedly maintenance-free batteries, the same problem can occur. Even with the slick top models, you can get at the cells. Just peel the label off the top, slowly, and you'll find that the filler caps are still there.

What's happened is that by changing the plate metal alloy slighty, the tendency to give off gas and evaporate water has been severely reduced. As a result, it was possible to eliminate normal battery service . . . almost. Failures do occur, though, and the ability to get at the cell caps can be a lifesaver if one or more is going dry.

The other half of the problem, resistance caused by cold, thick oil, has just about been eliminated by modern multiviscosity oils. Here, though, you should be guided by your vehicle's manual, especially if it's still under warranty. For older cars, I've experimented with many mixes under most climate conditions, and a premium grade 20W50 seems to be about the best compromise for me. It can't be made to thin out, even in a Florida summer when I was driving an elderly Volkswagen. And we get almost effortless cranking with an elderly Plymouth in some of our colder Missouri winters, when the mercury can get down to -20 degrees F.

The best way to handle winter, however, is to thoroughly winterize your wheels, beginning with an engine heater. There are several varieties of these little marvels on the market, varying in price from \$10 to \$40. When installed properly, they won't interfere with normal engine functioning, and they are an almost certain guarantee of reliable starting. In addition, they provide one hidden benefit that alone would be worth the price—instant heat. With the engine coolant kept at a comfortable 140 degrees F, the heater starts putting out instantly.

The coolant, by the way, needs to be checked periodically with an antifreeze hydrometer, as it can break down and lose some of its capacity to resist freezing. Also, if you've had overheating problems and put water in, you've diluted the glycol. A

rough 'n ready check is to put a cup of your coolant in the freezer (A chest type freezer is set at 0 degrees F. and a refrigeratorfreezer at 20 degrees F.).

Water in the gas is bad enough in the summer, but winter can turn it to ice, making the machine impossible to start. The best cure for this is one of the brands of Drigas fuel additive. This "bottled mechanic" is no more than a modified alcohol which will mix with the water, turning it into a poor grade of fuel that will mix with gasoline, instead of lying in ambush at the bottom of your tank. The source of that moisture is normal humidity which condenses out of the air in the tank. If you make a practice of keeping the tank filled up, there will be less air in it to provide moisture.

Another treatment-in-a-can is starting fluid-highly flammable ether in a spray can. Usually, one or two shots of this fluid will coax an engine to life. A better practice, though, is to insure the existence of a good spark by giving your ignition a thorough going over in the fall.

In these days of transistorized electronics, the old routine of plugs, points and condenser is a thing of the past except in older models. Distributor rotors and caps, however, are still vulnerable and should be checked, along with the spark plug wires, for signs of deterioration. A carbon track inside the distributor cap can cause several plugs to fire at the same time, resulting in severe mechanical damage. The usual source of the carbon is leakage from the crankcase, indicating a need for distributor work.

The ignition wires are another source of problems. The material inside the high tension insulation is not metal wire. It is a bundle of nylon thread impregnated with graphite. The reason for this substitution is to eliminate radio interference (metal wires also tend to make police radars inaccurate), but the carbon can break down and the insulation can crack, letting in moisture. Again, the temporary cure is in a can; there are moisture-absorbing, insulating sprays such as WD-40 on the market. Best bet, however, is to change the wires if the outer shell begins to show deterioration.

Winter Driving—Once you've assured engine reliability, you need to take a hard look at winter driving. From one fall to another is a whole year, and most folks tend to forget basic winter tricks. It is a known fact that the first set of wintery conditions causes more accidents than succeeding storms.

Remember, you've lost a good portion of your traction, and your normal summer habits can get you killed, especially if you're caught away from home when the snow hits. One half-safe trick that I use, is to keep a snow tire as a spare. That way, it can be quickly installed on the wheel most likely to spin in loose going—the right

Also, added weight in the trunk, in the

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Winterizing Your Wheels

form of a bag of sand or ashes will aid traction and dig-out capability. Sand alone is good, but the addition of coarse wood ashes aids the tires in gripping the snow. If you've had to use a traction aid, always be sure to run smoothly until you're back on a good surface. Sudden changes of momentum, such as turning, accelerating or braking will destroy your traction and put you back in the soup.

Every year, we read of people who, having been snowed in far from civilization, tried to keep warm by letting the engine idle to keep the heater going. This, of course, results in a relatively painless death from carbon monoxide poisoning. If you're sitting in an idling auto, look at your fingernails periodically. If they suddenly develop a bluish cast, you are about 15 minutes from the pearly gates. A sudden drowsiness or flushing are the other two symptoms of the onset of CO poisoning.

If the threat of getting snow-stranded is part of your winter hazard list, then you should think seriously about survival supplies. Your basic need is to be able to conserve heat, and many lives have been saved just because someone thought to carry a blanket along. Winterizing a vehicle isn't enough. You have to winterize yourself too.

A box no larger than a whiskey case will carry all you'll need for an extended stranding. You will need blankets, of course, and a full set of insulated underwear. With the engine shut off, your body is the only source of heat, so your first consideration is insulation. Second, is food, in order to produce more heat, and current issue military type rations can't be beaten. The MRE's need no water and, even if frozen, can be thawed out inside your blanket, and eaten at body temperature.

Once bodily survival is assured, the next thing is to be able to attract attention. If you're snowed under, you may be there for several days until the plows get through, so think about long-range communication. The ol' CB will reach most state patrol stations, and most areas monitor Channel 19. Normally, you can always count on getting a trucker who will relay a message. While skiptalk is illegal, it works quite well at night, and all you have to do is reach someone with a phone and you're home free.

Visual aids also will help a rescuer in homing in on you, so a set of flares is a worthwhile investment. Even without flares, you can be seen a long way at night simply by turning on your headlights. Snow is not opaque, and your lights will create a large area of luminescence.

Winter travel need not be a great inconvenience. With a little forethought, you can assure that not only will you be able to count on getting started on a freezing day, you will also be assured of arriving at your destination and returning home. •

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ASG 1203

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ASG 1204

Cltrus County, Florida, God-fearing, ex-Marine, 53 years old, wishes to contact local survivalists. Exchange good ideas and help each other. Have been a survivalist for 15 years and am prepared. No crazies, please.

ASG 1205

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ASG 1206

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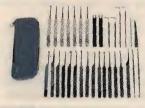
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Cement Making

Cement and lime are readily available to anyone with a kiln, fuel and limestone . . .

By Bill London

HE ancient Greeks, Romans and Etruscans—and probably the Babylonians and Abyssinians as well—all did it. So did the Toltecs in Mexico and the Incas in Peru.

They all made cement without the use of electricity or petroleum products. And their cement-glued masonry is still standing, in structures they built their empires on. And with a little trial-and-error experimentation, you too can heat and crush limestone, and make your own cement.

Though it seems a miraculous powder, with the ability to bond rocks into solid and long-lasting structures, cement is actually a very simple compound. Limestone (one of the world's most common sedimentary rocks), if heated, changes chemically releasing carbon dioxide. If the limestone used has a high clay content, the resulting lumps can be beaten to a powder that is cement, known in the industry as natural cement. Relatively pure limestone (without clay), when heated and powdered, produces lime. Yes, it's that easy.

Until the 18th century, cement was made according to the assumptions and methods used in Roman times. All cements were natural cements, made from whatever limestone was handy. Consequently, some of those natural cements hardened quicker and solidified better than others.

Then in 1756, John Smeaton built the Eddystone Lighthouse near Plymouth, England—a structure renowned today as the "chief pillar of modern architecture." Smeaton experimented with various limestones and realized that the rocks which made the best cement had a high clay content. He assumed, rightly, that it was the mixture of clay and lime that hardened into what he called artificial stone.

Seventy-five years later, Joseph Aspdin, an English bricklayer, vowed to create a cement as strong as the famous stone quarried on the Isle of Portland (the stone that built St. Paul's Cathedral in London). Aspdin blended powdered limestone, clay and water, then allowed the mixture to dry by evaporation. He broke the resulting mixture into lumps and threw them into a kiln. After baking and then powdering, the result was cement—what he called

portland cement, as good a building material as the stone from the Isle of Portland. Aspdin was the first to understand that combining specific ratios of clay to limestone under high temperatures created a consistently high-quality cement. On October 21, 1824, he was awarded Patent #5082 from King George IV for his discovery.

Portland cement is still made essentially to Aspdin's recipe. But with a trial-and-error approach based on some informed guesswork, anyone can still make cement, using locally gathered materials and the available energy of charcoal or coal. Natural cement made in that manner may not be as consistently strong or quick-setting as the bagged pre-mix, but even an approximately correct blending of limestone and clay can produce an excellent cement. Best of all, the materials needed are accessible almost everywhere, no matter what the condition of the consumer society.

The first ingredient in the natural cement recipe is limestone, luckily one of the most common rocks on this continent. Those who don't know the location of any limestone near them can check a geological survey map of their area (available from most state university geology departments, state or federal geological societies, or state mine bureaus). Limestone is a relatively soft fine-grained rock, often gray, white or black in color—but then so are many other rocks. One test for limestone is to break a rock in parts, and if the odor of the newlybroken faces resembles swamp gas, it's limestone. Also, if a small amount of diluted hydrochloric acid added to a scratch on the surface of the rock produces bubbles of effervescence, the rock is limestone.

The key to production of good natural cement is an appropriate proportion between clay and pure limestone. Most limestones are not pure, but are already mixed with clay. Unfortunately, there is no easy way to discover what proportion is present in a particular rock. Microscopic analysis is necessary for that.

Heat, Powder, Water—The best way to find out about the suitability of any specific limestone sample is to try to make

cement from it—heat and powder it, then add water to the powder. If it sets easily to firmness and dries hard, the proportion is adequate. The optimum is one-quarter clay to three-quarters pure limestone. If the mixture does not make good cement, most likey, clay will have to be added. Of course, one problem with the trial-and-error method is that all the limestone from one area is not chemically identical; the clay content can vary from stone to stone. Limestone is present in layers, however, so by taking only stone from one level, consistency of the final product is more likely.

To heat the limestone, begin with rocks of similar size. Approximately fist-size pieces are ideal, with certainly none larger than about six inches in diameter. The goal of the heating is to calcine the rock—to bake it to a temperature just below its melting point. That amount of heat changes the chemistry of the stone, purging it of carbon dioxide. The specific temperatures involved vary with the percentage of clay present in the sample, but roughly fall within the range of 1,000 to 1,400 degrees C (about 1,800 to 2,500 degrees F)—the temperature that turns metal white hot in a blacksmith's forge.

That high temperature range is certainly not impossible to produce, but it does require a special kiln. The walls of such a kiln would have to be made of brick, and the exhaust vent very tall to produce a strong draft. Forced air intake, using a fan or bellows, could be needed. Wood can not generally produce such high temperatures, though both coal and charcoal have the concentrated BTUs (British thermal units) required. Inside the kiln, after a charge (a layer of fuel and tinder) is placed at the bottom, alternate layers of the coal or charçoal fuel with limestone. Seal the kiln (except for the air intake vents), light the charge, and after the fire consumes all the fuel, allow it to cool. The calcined limestone will resemble the original rocks, but will be chemically different.

After removing those rocks from the kiln, crush them and mix the resulting powder to promote uniformity. The crushing of the calcined rocks is quite easy. A metal bar (made from an automobile axle, for example) pounding into a salvaged brake drum will pulverize those rocks. The



A kiln loaded with alternate layers of limestone and charcoal, ready for lighting.



Limestone rocks, the right size for baking to make cement.

Access To Information

The Magic Powder by Earl Hadley published by G.P. Putnam & Sons, New York, 1945

Cement & Concrete by Louis Sabin published by McGraw, New York, 1907

Portland Cement by A.C. Davis published by Concrete Publications, London, 1934

Small-Scale Production of Cementitious Materials by R.J.S. Spence published by Intermediate Technology

Publications, London, 1978
Lime Production at Swaneg Hill School,
Botewana
by Peter R. Fewster

published by Intermediate Technology Publications, London, 1977

powder is cement, to be stored carefully to prevent moisture absorbtion and mixed with water immediately before use.

If the limestone selected, heated and powdered was pure (without significant clay content), the result will be lime. Again, the same problem of identification arises. Without chemical analysis, there is no easy way to tell if the resulting powder is lime or natural cement—other than adding water and waiting for the mix to set. Natural cement, of course, hardens to rock-like firmness in a day or two. Lime won't harden.

In both cases, adding water to the powder creates heat. Cement as it hardens gets warm, but lime gets so hot it can be explosive. So beware and test only small portions.

Quicklime is the name given the powder resulting from calcining of pure limestone. Due to its dangerous propensity to heat explosively in contact with water, quicklime is often slaked, or mixed carefully

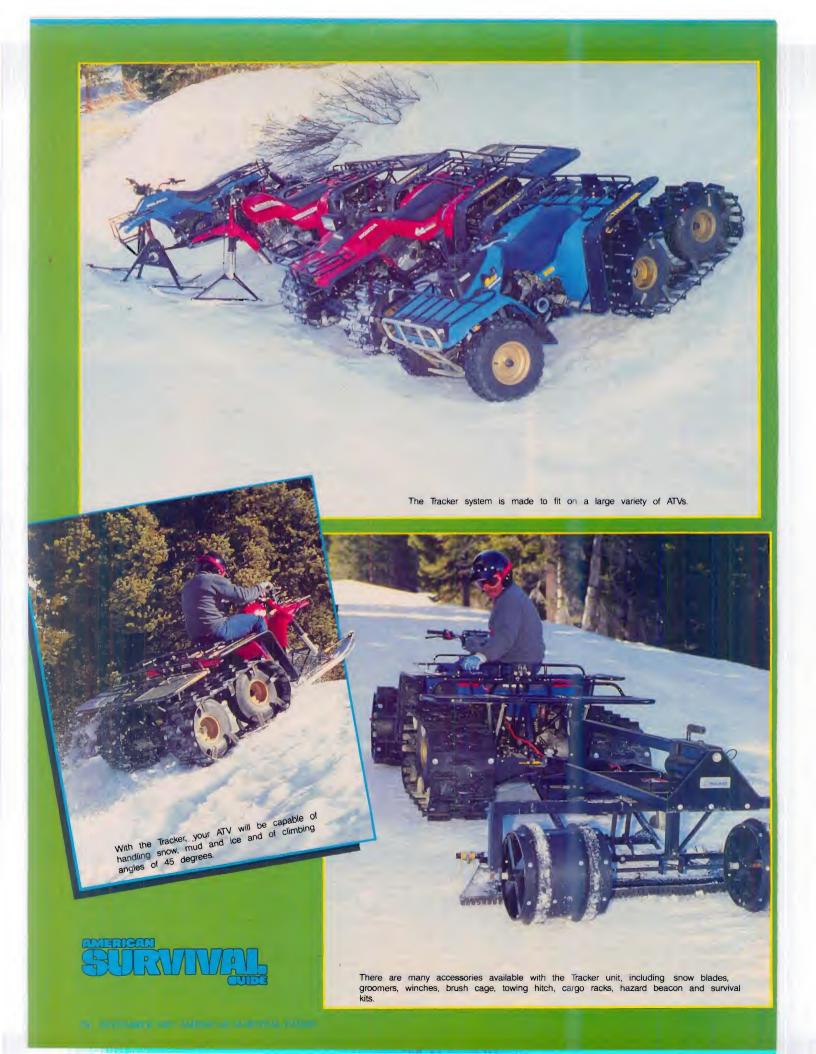


Cement made from calcined limestone.

with small amounts of water. Slaking is done most safely by sprinkling water carefully on thin layers of quicklime (not powdered, just left in lump form) on a floor or platform. Add water until no more is readily absorbed, then turn the quicklime and moisten again. The lumps of quicklime crumble as the water combines.

Cement and lime-both are readily

available to anyone with a kiln, fuel, and limestone. Ancient civilization around the world discovered that process millenia ago. And today in remote sections of the developing world, cement and lime are still made that way. And armed with this knowledge, survivalists have no need to rely on modern consumer society for these two very useful products.



Mud, snow, swamps, etc.:

Tracker Industries ATV Treads

Converting your machine to a true all-terrain vehicle . . .

By Joe Colombero

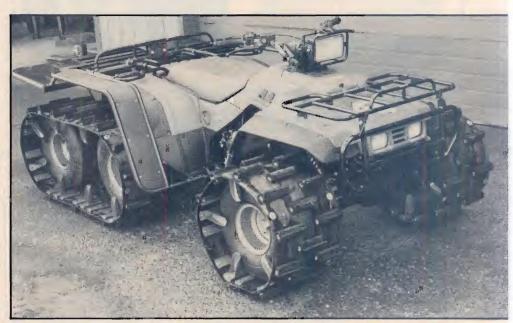
A TVs have proven themselves to be excellent tools for hunters, farmers, survivalists and outdoors enthusiasts. The small three- and four-wheeled vehicles have the ability to move over rugged terrain and carry heavy loads with ease and they usually require only minimal maintenance and small amounts of fuel.

Despite their tremendous versatility, there have always been a few things that ATVs can't do, their biggest limits being caused by lack of traction and the shortness of their wheel base.

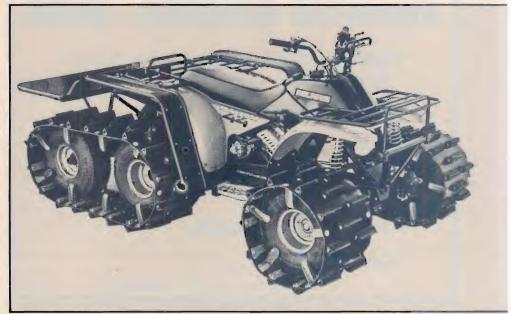
Tracker Industries of Beaverton, Oregon, is now marketing a kit that defeats these problems and will transform almost any ATV into a true "all-terrain vehicle."

The Tracker system is a snow conversion package designed for use on most three-and four-wheeled ATVs. Basically, it's a halftrack add-on which transforms an ATV into a versatile "go anywhere, any-time" machine capable of handling snow, mud, ice, muck and climbing inclines up to 45 degrees. Tracker's basic package includes two completely assembled tracks with tire guides and grousers; four wheel assemblies with pneumatic tires, hubs and bearings; two leg guards; rear axle and suspension package with air shock and track tensioning device.

Tracker also offers a complete line of options that can help convert the ATV into a real work horse. Optional equipment includes manual or hydraulic snow blades, cross country groomers and track setters, trailers, brush cage, winch, light bar/back rest, towing hitch, rotating hazard beacon, cargo racks, skis and struts for four wheelers, mono ski for three wheelers, power tiller groomer, auxiliary air pumps, convertible top, and survival kits.



The Tracker system is shown on two different four-wheel-drive ATVs. The Japanese-made Honda 4X4 (above) has a 350cc four-stroke engine with auto-clutch and five-speed transmission. The American-made Polaris 4X4 Trail Boss (below) features a 250cc two-stroke engine with a variable-speed automatic transmission.



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Tracker Industries ATV Treads

Ruggedly designed for reliability, the developers of the Tracker system spent four years field testing in the Cascade Mountains of Oregon where snow levels often exceed 14 feet. Stressproof axles, precision sealed bearings and stainless steel tire guides are just a few examples of component quality. Prototype models have been in service since 1982 and the new 1987 models incorporate overall system improvements and a new track design.

The tracks themselves are made from a combination of rubber compounds with a unique grouser shape which supplies excellent traction and maneuverability. The patented split-axle design also allows the system to be installed or removed in a matter of minutes.

Once installed, the Tracker system works as well as the manufacturer's promise. Because of the added width and length of the wheel base, there is an increased amount of stability over stock ATVs and the improved braking power is dramatic. Swamps are easily crossed, freshly plowed muddy fields are no problem, sharp inclines are easily climbed and the most rugged terrain is accessible.

The Tracker system is most impressive in the snow. With the optional front skis in place (the skis have replaceable Teflon pads that allow the rider to cross short, non-snow areas), a tracker-equipped ATV handles snow and ice as well as a snow mobile and can actually go places that a snow mobile can't reach. It's a winter hunter's dream machine.

With the right ATV as a base, this system can handle a huge variety of jobs including feeding livestock, plowing snow, cruising timber, surveying, cattle roundups, setting and grooming cross country trails, maintaining lifts, as a rescue vehicle in difficult terrain, checking power lines, crossing deserts, skiing inaccessible hills, ice fishing, hunting, etc.

Several ATV manufacturers sell 4x4 ATVs which adapt superbly to the Tracker system. An optional front tread easily fits onto the forward wheels of the four-wheeldrive ATVs. When this added traction is combined with the already superior traction of the rear Tracker system and racks are installed, the combination makes a respectable tractor/tank with 500 pounds of carrying capacity.

The basic rear track kit costs \$1,449.95, which isn't cheap, but the quality of the workmanship is well worth it, especially when you consider the cost of a small tractor (which couldn't do half of the work of a Tracker-equipped ATV) and the versatility it will lend to your ATV.

For more information contact Tracker Industries, Inc., Dept. ASG, 3560 S.W. 209th, Beaverton, OR 97007; (503) 642-1123. •

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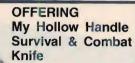
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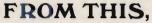
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